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ABSTRACT

This report on the National Assistance Project for Special Education Technology provides a description, evaluation of the project, case studies, and vignettes. The project provided technical assistance to local school districts to implement technology within special education programs. In year 1, technical assistance was provided to 27 local education agencies, 2 intermediate educational units, and 1 state education agency. Thirteen of these sites received additional assistance in year 2, and 17 new sites were added. Detailed case studies for seven of the original sites and five additional mini-cases helped to assess the components of effective technical assistance, as well as factors influencing the success or failure of change efforts in special education technology. Technical assistance was provided in needs assessment, problem identification, goal setting, keeping informed about and utilizing new technology in special education, planning for introducing educational innovations, on-site demonstrations of technology products and applications, training workshops, linking school districts with other technology resources, and consultation with experts. The 100-page evaluation section covers the theoretical framework, the evaluation design, and the results of the cross-case analysis. (Contains 22 references.) (SW)

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National Assistance Project for Special Education Technology

FINAL REPORT

-Part I: Project Description-
-Part II: Evaluation-

September, 1986

The NETWORK Inc.
ANDOVER, MASSACHUSETTS

EC 304165

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FINAL REPORT

Part I: Project Description

Part II: Evaluation

The National Assistance Project for
Special Education Technology

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Submitted by

The NETWORK, Inc.
Contract #300-83-0258
September, 1986

This document constitutes Part I (Project Description) and Part II (Evaluation) of the Final Report for the National Assistance Project for Special Education Technology (NAPSET), conducted by The NETWORK, Inc., through the support of the U.S. Department of Education, Special Education Programs, Technology and Marketing Branch.

James Johnson, Chief
Jane Hauser, Project Officer

Part III of this report (Case Studies and Vignettes) is bound separately. Copies of each section of this report, as well as a summary, are available at cost through:

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The project referred to in this document was conducted under contract #300-83-0258. The opinions expressed are those of the authors and do not necessarily reflect the position or policy of the Department of Education, and no endorsement by the Department should be inferred.

To assure anonymity, the names of school districts, other agencies, and individuals participating in the project have been fictionalized in this report.

NAPSET FINAL REPORT

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NAPSET FINAL REPORT

PART I: PROJECT DESCRIPTION

1.0 OVERVIEW

The micro-chip based technologies of computers, videodiscs, telecommunications, and electronic communication aids for the handicapped are rapidly changing the ways we live and learn. Advances in the application of these technologies to special education offer expanded opportunities for special needs students to receive an appropriate education, and unparalleled challenges to educators responsible for delivering that education. The National Assistance Project for Special Education Technology (NAPSET) was developed to assist educators and school districts wrestling with the informational, educational, organizational, and financial issues raised by the question, "How can and how should we incorporate new technology into programs to improve the quality of education for our special needs students?"

The central purpose of the NAPSET project, as stated in our original proposal, has been to:

> ". . . . provide comprehensive, flexible, and responsive technical assistance to increase the knowledge, skills, and confidence of local school district personnel as they implement technology within special education programs." (Technical Proposal submitted in response to RFP 83-017, March 1983.)

Toward that end we developed an approach for providing and evaluating technical assistance to a selected group of local education agencies (LEAs), intermediate educational units (IEUs), and state education agencies (SEAs) from around the country which applied for assistance under the terms of the original Department of Education Office of Special Education Programs contract. Our approach included the following features:

- individualized planning assistance in needs assessment, problem identification, goal setting, and the implementation of goals relating to the utilization of technology in special education;
- generalized planning assistance in the process of making and managing change in schools: principles in the introduction of educational innovations;
- information services, to keep clients informed of existing and emerging technology resources and applications;

- on-site demonstrations of technology products and applications;
- hands-on training workshops developed and provided by project staff, special education technology consultants and advisers;
- linking and networking of districts with other federally-funded assistance projects, model technology programs, and public and private sector resources;
- consultation with recognized experts in the field, to address specialized questions regarding technology applications in special education;
- in-depth case studies of selected districts participating in the project, to chronicle and evaluate our assistance and the experiences of the district.

After an initial pilot test of assistance procedures and protocols, which took place in three New Hampshire school districts, 38 districts were chosen to participate in the first project year. Technical assistance was provided to 27 local education agencies, 2 intermediate educational units, and 1 state education agency. Of this group 13 were selected to receive a second year of assistance, with 17 new sites selected for participation in the second year as well. A detailed description of the three years of project planning and implementation follows in the body of this report.

In addition to providing technical assistance to 55 special education programs around the country, NAPSET documented the entire project, chiefly through the development of detailed case studies of the course of the NAPSET interventions in seven of the original NAPSET sites. The case studies, and five mini-cases developed at the end of the project, enabled us to fulfill a secondary project goal: to understand the components of effective technical assistance, and analyze what factors influenced the success and failure of change efforts in the area of special education technology. This documentation and evaluation component proceeded alongside the provision of technical assistance throughout the NAPSET project so that research questions could be tested and revised, data collection methods established and refined, and some preliminary data analysis accomplished before the final analytic effort at the end of Project Year Three. This ongoing evaluation, involving an interactive relationship between project researchers and the assistance team, provided an opportunity for discussions about assistance strategies currently in use, and facilitated the revision of those strategies as appropriate over the course of the project. A complete discussion of the evaluation component and the results of our cross-case analysis follows in Part II of this report.

2.0 PROJECT IMPLEMENTATION

2.1 Assumptions

The NETWORK's approach to technical assistance in special education technology in the NAPSET project was based on a set of assumptions about assistance provision which have been refined through experience and research over the course of the past seventeen years. We outline those assumptions below in an effort to make explicit the process by which we developed the NAPSET technical assistance model, and the specific activities which comprised our assistance.

First, we understand technical assistance to be a pro-active, directed effort, not just a passive resource available for clients' use. School districts often request technical assistance because they have needs they have not been able to address adequately. It is the assistance provider's responsibility to help articulate those needs, and to help find the most appropriate ways to meet them. Assistance must be directed toward the particular needs of particular clients; while basic strategies may be used repeatedly, they must be tailored to the requirements of the individual client each time.

Assistance providers work with a wide range of client types; to effectively implement assistance strategies they must be familiar with the full context within which change is to be made. This context includes organizational, political, motivational, and empirical factors, all of which may serve either to facilitate or to impede change. The assistance providers must understand when these factors are operant and what the relationships between them are in order to formulate an appropriate assistance strategy for each district. In this respect, the assister takes the initiative in formulating an assistance plan.

On the other hand, an assistance provider cannot simply function as "outside experts" offering advice from a distance. S/he must also enlist the active participation of district personnel in the change process, from the very beginning. The success of the assistance effort will depend on the degree to which clients take ownership of and feel responsibility for the changes themselves. Thus the assistance provider's role is essentially that of a helper: one who works with his or her clients in a variety of ways (as a resource provider, a linker, a consultant, a moral support) to <u>enable</u> them to make the changes they have determined together to be appropriate. The assistance provider must solicit and receive district participation in both needs assessment and program planning (as well as program implementation) to ensure accuracy of the assessment and to establish ownership of the projects to be undertaken.

The picture which emerges is one of a close, collaborative relationship between clients and assistance providers -- a relationship built upon trust, mutual respect, and credibility, which is the provider's responsibility to foster. Providers must

recognize, respect, and determine how to make best use of the talents and resources of their clients. They must convey a sense of confidence in their clients' ability to make change happen while also making specific suggestions to facilitate its happening. Without this kind of trusting relationship, it is unlikely that clients will commit themselves deeply enough to the change effort to make success possible. The assistance provider acts as both an expert and a colleague, and must combine these roles successfully to be effective.

While The NETWORK stresses process considerations in its approach to technical assistance, the content of assistance is not forgotten. Rapid, targeted information provision and resource linkage are the hallmarks of this aspect of our technical assistance.

The NETWORK operates on the assumption that a quick, directed response to an information request is more useful to most school districts than a slower, more detailed and comprehensive response. We are able to provide these rapid responses in part through the maintenance of a technology database and file system, which is updated continuously. Another way of insuring a quick and appropriate response to information needs is to use a team approach to technical assistance.

A team of assistance providers associated with a particular assistance project can constitute a forum for sharing information and discussing difficult situations in client districts, so that the accumulated experience of individual assistance providers is multiplied in the context of the team. This increases each team member's knowledge and creativity in responding to new client situations. Flexibility is a crucial characteristic of effective technical assistance. Flexibilty is fostered through team support and the sharing of client experiences, which broadens each individual provider's understanding and imagination with regard to the assistance process.

While we make every effort to keep on top of the content information relevant to our projects, we know we cannot keep track of everything. For this reason we have established extensive networks of resources, both human and material, to which we refer clients when their needs exceed our ability to provide them with assistance. By maintaining these networks or linkage systems we not only provide our clients with a wider range of information and intelligence, we also facilitate communication and sharing throughout the field, which is ultimately advantageous to everyone.

2.2 Design Features

2.2.1 Approach

Our approach to the provision of technical assistance services was based on the premise that, in most schools, technology is an innovation. For its implementation to be effective, local planners need to understand not only the features and potential

applications of the technology itself, but also the social dynamics that will affect its introduction to their school. They need to base strategies for technology use on a comprehensive analysis of existing conditions within their own school setting, focusing on the readiness, willingness, and ability of its participants to adopt this, and other, innovations.

Toward this end, our assistance included a heavy concentration on planning- related activities with client site representatives. In addition to providing information about technology products and their applications in special education programs, we focused clients' attention on the dynamics of educational change, helped them to conduct assessments of local conditions and needs, and assisted in the development of both immediate and long range strategies for implementation. We were committed to building the capacity of clients to plan for the introduction and institutionalization of innovations related to special education technology, so that our relatively short-term intervention would have a powerful and lasting impact.

A second fundamental premise of the project was that clients be integrally involved in the determination of the nature and scope of assistance services, and that these services be customized to address their specific and unique needs. Toward this end, we developed a system that revolved around Local Co-Coordinators and Local Planning Teams (LPTs) that worked with NAPSET staff through-out the project. A Cooperative Assistance Agreement (CAA) outlining the technical assistance plan for each client site, specifying objectives, timelines, and responsibilities, was developed collaboratively with these local representatives and used to guide our activities throughout the year.

A third feature which characterized our assistance approach was the clustering of client LEAs geographically to facilitate cross-site networking and exchange. In addition to individual LEAs, several groups of two, three, and four LEAs were selected to receive project services together as a group. Some of these groups of districts were already associated through an IEU or an SEA, others established an association for the sole purpose of taking advantage of NAPSET assistance opportunities. These multi-district sites created expanded opportunities for research, as each configuration required a different kind of technical assistance, geared to the peculiarities of that particular setting.

The geographical clustering of client sites promoted cross-site networking and resource sharing, as clusters of LEAs could work together planning and reviewing hardware and software, and could pool resources for technology acquisition and use. A final benefit of geographical clustering was to create opportunities for peer training and support of new clients in the third project year by those involved in the project during Year II.

2.2.2 Organizational Structure

Each site selected for participation in the NAPSET project was assigned a liaison on the NAPSET assistance staff. The liaison was responsible for coordinating all project activities and communications with the site. Local Co-Coordinators selected by each LEA served a similar liaison function within the client site. Clients were encouraged to appoint an administrator and a teaching staff member to fill these roles. (In Year III sites only a single coordinator was required, as we found that shared leadership was not particularly successful. The coordinator role seemed to fall naturally to one or the other of the co-coordinators in the first year, anyway.)

The Local Planning Team consisted of six to eight individuals, selected by the Local Co-Coordinators with the assistance of the NAPSET liaison. Coordinators were encouraged to select team members who had an interest in special education and technology use and represented a variety of constituencies, affiliations, and positions within their district. These included:

- special education staff
- regular education staff
- teachers
- district administrators
- Directors of Special Education
- parents
- members of existing technology committees
- opinion leaders in the district
- inservice planners

As the primary recipients of NAPSET services, the Local Planning Teams served as the driving force for the implementation of technology in the district. They conducted assessments of local conditions and needs, assisted in the development of the CAAs, and carried out all tasks related to the change effort identified as the responsibility of the local district.

2.2.3 Service Delivery

A comprehensive range of services was provided to participating LEAs, IEUs, and SEAs through their LPTs. Three to five days of on-site assistance was provided to each client by NAPSET staff and consultants, in addition to unlimited access to off-site consultation and support via the telephone, the mail, and electronic correspondence.

Services to be provided to each site were delineated in a Cooperative Assistance Agreement (CAA), which was developed jointly by the LPTs and their liaisons. In this document, the district's special education and technology needs were established, goals for the LPT to accomplish in the upcoming year were specified, and the responsibilities of both liaison and LPT were laid out. The CAA served as a guide for NAPSET activities at each site over the course of the project year.

The specific types of assistance provided to each site varied according to need, but included services in the following areas:

Planning. All clients received some assistance in the form of generic planning activities, which addressed such topics as needs assessment, resource identification, team work, problem solving, staff development, and educational change management. Services were also offered in addressing planning needs directly related to special education technology, such as the preparation of formal district plans for technology use, identification of funding sources, purchase of equipment, and allocation of resources. A central focus of planning assistance was to help clients design and implement internal strategies for effecting desired attitudinal and procedural changes to accomodate the introduction and institutionalization of technology in their district. Clients were encouraged to apply the Stages of Concern model, a series of instruments designed at the University of Texas to assess staff attitudes toward an innovation (described further below), to guide staff development activities after project staff had left the site.

Demonstration. Applications of a representative range of technology products in a variety of areas (e.g., microcomputers, videodisc, telecommunications, adaptive devices) were demonstrated as desired by each client. These demonstrations, conducted without bias for any particular products, provided an overview of technological possibilities for the consideration of local decision makers. Included were descriptions of how other LEAs had implemented technology, and had used specific products in administrative and instructional settings. In addition to products demonstrated on-site and at the Orientation Meetings held at the beginning of each project year, a slide show was developed for client use to promote local awareness of available technology resources.

Training. As negotiated through the CAA, Local Planning Teams, LEA staff, and interested others received training in the selection and use of various technology products. The training featured hands-on experience to give clients direct knowledge of product assets and liabilities within their own settings and for their own needs. A series of workshop resource folders were developed for use on site in the following topic areas:

- Special Education Technology (an overview)
- Software Management
- Administrative Applications
- Adaptive/Assistive Devices and Communication Aids
- Telecommunications
- Funding/Resource Development to Support Technology Acquisition

Each of these resource folders contained information about the specific topic including, when possible and relevant, articles, general and specific applications in schools, resources (people/projects/sources), charts, lists, bibliographies, product descriptions, and reviews. In addition, the folders included training modules, including overview sessions, that were used as the foundation for custom-designed, on-site technical assistance activities for specific clients.

Information Services. Clients received copies of existing print and non-print information on topics of interest to them throughout the contract. Customized information packets consisting of such resources as annotated bibliographies, journal articles and software reviews were prepared by project staff to assist local planners in implementing activities specified in the CAAs. Clients also had access to several databases related to special education technology, including those that have been developed by NAPSET and other OSEP contractors (e.g., Project EduTech and Special Education Software Center). Information updates regarding new products on the market were provided regularly by NAPSET staff. Our purpose was to disseminate information on existing resources, not to promote any particular product.

Linking/Networking. To promote cross-client sharing, LEAs were encouraged to communicate regularly with each other. The electronic mailboxes and bulletin boards available through SpecialNet enabled many clients to exchange messages through on-site microcomputers. A short "hotsheet" entitled "NAPSET Bits" describing planning activities and effective strategies used by educators throughout the country was developed and disseminated regularly by project staff.

During the third project year, sites in their second year of NAPSET assistance were required to participate in a structured networking activity within their geographical region [see Year III below]. In general, project staff kept clients abreast of ongoing developments in other OSEP-funded projects, linked clients with national model technology programs and "Lighthouse" projects funded by the National Diffusion

Network, and encouraged clients to tap into state and regional technology-related resources, such as user-groups and consortia.

Information Database. To support the delivery of the above-mentioned services, the NAPSET staff included a part-time information specialist. She was responsible for monitoring developments in the field of special education technology, compiling and cataloguing this information, circulating the most relevant information among staff members, and sending out information in response to clients' requests. Her specific duties included:

- conducting an ongoing literature review of technology applications for special education;
- studying other OSEP-sponsored technology projects for information which could inform the NAPSET effort;
- reviewing, cataloguing, filing, and circulating articles from all relevant education and technology publications;
- reviewing information sent out by technology manufacturers and soliciting information on new products;
- maintaining a computerized information database, library, and vertical file of material gathered throughout the project, for use by both clients and other project staff.

The NAPSET library contained print material (books, journal articles, conference proceedings, and papers), information on other projects and organizations involved in educational technology, hardware and software product information, and demonstration software. All materials were reviewed and indexed, and most were entered on the project database so as to be accessible to a cross-indexed computer search. In addition, print files were maintained on topics about which the project received frequent inquiries (e.g. telecommunications, software for use with learning disabled students, adaptive/assistive devices, etc).

The NAPSET library and database was a resource to staff members throughout the project. It enabled them to keep up-to-date on the latest developments in special education technology, and provided materials for the development of workshop resource folders, as well as information for specific client requests. The database was directly accessible to all clients, though in practice most users requested information through their liaisons.

2.3 The Pilot Test

The NAPSET project began with a pilot test, designed to test our technical assistance strategies as well as our case study methodology. As described in the Evaluation Plan (project deliverable submitted 10/1/84), our intention was to use the Pilot Test to "assess assistance strategies . . . before using them with

LEAs in Option Years 1 and 2, develop useful and effective information gathering strategies" and focus our research by developing an issues guide "to direct our attention to those factors most directly related to the provision of effective technical assistance."

Three LEAs, all part of an intermediate education unit in southern New Hampshire, were chosen to participate in the Pilot Test. Those sites satisfied a range of selection criteria, including:

Range in Technology Sophistication. The pilot districts had to represent a range of experience with new educational technology for use in special education. In the second and third project years we would provide assistance to districts that fell at all points along the continuum of experience with technology, and would be looking for a variety of different special education needs in applicant districts. By involving districts with a variety of such needs in the pilot test, we hoped to cover a range of available special education technologies and learn the most effective ways of helping districts with different levels of technological sophistication and financial resources.

Range in Demographics. The pilot districts had to represent a variation of demographic characteristics. Since we would be looking for variation in income levels, ethnic composition, and community type (urban, rural, suburban) in clients in the subsequent years, we wanted to work with a similar demographic spread in the pilot test LEAs.

District Commitment. The pilot districts had to commit some of their own resources (human, fiscal and/or material) to the implementation of the Cooperative Assistance Agreement. While we saw NAPSET as providing a free service unavailable to most districts, we knew that without their making a concrete commitment of their own to the technical assistance activities, there would be less probability of lasting results. The five release days required for each participating staff member was meant to conceptualize the more general willingness to commit time and effort to the project which we were looking for in our pilot districts.

Each district was also asked to assist us in documenting and evaluating the success of the pilot test.

We also wanted to work with districts which belonged to a pre-existing intermediate education unit (IEU), such as a collaborative or a regional service center. One of the goals of the NAPSET project was to develop structures for multi-district cooperation in the development and use of new special education strategies in order to promote cross-client networking and resource sharing. In the second and third project years we planned to choose many client districts which were situated in geographical proximity to each other, for travel efficiency and cost-effectiveness, and to promote this kind of cross-client

collaboration. While not all our client districts would belong to an established IEU, we expected that educational collaboratives would be a typical structure through which many districts coordinated the funding and implementation of special education and technology services.

In addition to these general criteria, we required that the pilot districts be located near The NETWORK, to facilitate easy and inexpensive access.

The three New Hampshire sites satisfied the range of selection criteria outlined above. They were situated within easy commuting distance of The NETWORK, they expressed a high level of commitment to the project, and they represented some diversity both demographically and with respect to technological sophistication. In both their "typicalness" and in the range of variation in local characteristics, we felt they represented, in a small way, some of the variation we would be working with in subsequent years.

We wanted to simulate conditions as closely as possible in the Pilot Test, but certain procedures presented difficulties. In particular, it was not possible to replicate a two-day orientation meeting, which would involve clients from all over the country, and would include demonstrations of hardware and software as well as numerous planning exercises. Instead we planned a two-part substitution program to orient pilot sites to the NAPSET project. First, we hosted their attendance at a Special Education Technology Fair presented by the Northeast Regional Resource Center (NERRC) in Hyannis, MA, to provide a substantive introduction to the technology. Then we offered a one-day follow-up orientation meeting at The NETWORK in June, to introduce the pilot sites to our technical assistance approach. During this meeting, the NAPSET staff offered a detailed discussion of our change model, discussed local planning team selection criteria, and met individually with district representatives to begin mapping out a Cooperative Assistance Agreement.

Over the summer, pilot site coordinators convened their local planning teams and liaisons drafted CAAs, which were sent to local representatives for their review. In September, the first on-site meeting in New Hampshire took place. It involved all members of the three pilot LPTs; its purpose was to provide orientation information to the local planning team members, and enable the liaisons to finalize the CAAs with them. Staff members from the IEU to which all the sites belonged were also present. They discussed the coordination and sharing of resources through the IEU, as well as reviewing the services they provided in the area of special education technology.

Up to three more days of on-site assistance was provided to the pilot sites over the next nine months. As liaisons began to get involved with the second year clients, these site visits merged with their second year responsibilities, and the New Hampshire sites ceased to function as true pilot sites. However, since we had documented our activities closely over the previous four

months, and gathered evaluations from pilot sites throughout the process, we were able to learn a considerable amount from the short experience.

2.4 Learnings from the Pilot Test

The pilot test brought to the surface several issues regarding assistance provision which the NAPSET staff had not considered, and enabled liaisons to revise their strategies, incorporating these learnings before beginning work with second year clients. We found, for example, that while assistance providers were pre-occupied with communicating an understanding of the "process" considertions, their clients were more concerned with immediately addressing specific "content" problems regarding special education uses of technology in their district. We learned that while assistance providers may share the same end goals with their clients, they needed to be more sensitive to their clients' immediate concerns. The NAPSET concern with engaging clients in a planning process which would ensure long-term effectiveness of their chosen strategies had to be tempered with the understanding that their concerns were often at a more basic personal or informational level. We learned that without abandoning the planning orientation, assistance providers needed to address their clients' more immediate concerns directly. We learned to expect the tensions produced by these somewhat competitive concerns, and to work with them, confident that both could be addressed over the course of a year of assistance.

We were also reminded of how slowly change occurs in a school district. Initial meetings with clients, in which the project was explained and the district's role and responsibilities were delineated, took much longer than we had anticipated. Establishing a good working relationship with a team, and clarifying its function, was an important but extremely time-consuming process. For many, the concept of "change agent" was a new one. Assistance providers had to repeat and reiterate in many forms the idea that the team itself was largely responsible for the success of the CAA, and delineate ways in which members could meet these responsibilities. We realized the team itself needed some time to "shake down" and establish a working routine; thus, the staff insisted that second year teams meet at least once prior to the first on-site visit. We also learned that assistance providers needed to assess the team's capabilities carefully, and establish CAA goals which matched these capabilities, rather than being overambitious, thus setting the team up for failure.

Many of the activities specified in the CAAs centered around research and planning; consequently, we realized that observable changes in practice would not be evident in most districts until late in the technical assistance contract period. The long-range orientation of the planning activities meant that some changes would not even take place until after assistance providers had left the districts. Realizing this, we determined to follow our

Year I case study sites through to the completion of Year III, so as to be able to document to a greater degree the extent of changes effected by the CAA.

Improvements in our documentation and evaluation procedures which resulted from the pilot test are discussed in Part II of this report.

3.0 YEAR II

3.1 Selection of Year II Clients

Even before the beginning of the Pilot Test, the NAPSET staff developed and began implementing a series of activities designed to identify client sites for the first full year of assistance provision. This identification process included three stages: building awareness of the project, sending out applications, and reviewing the returned applications.

Through a publicity campaign initiated in December 1983, we promoted widespread awareness of NAPSET throughout the country. Messages were posted on the Federal Bulletin Board of SpecialNet, presentations were made at both national and regional educational technology conferences, articles were written for newsletters, and telephone and mail correspondence was maintained with state departments of education, Regional Resource Centers, professional organizations, technology-related projects and a wide range of other interested parties. Through these communications we were successful in informing thousands of educators about services and resources available to them through the project.

A brief, four-page application form, together with a cover letter describing application procedures, was developed in February 1984. These materials were sent to any educational agency that requested them, and multiple copies were sent to each state department of education and all Regional Resource Centers for expanded dissemination to other potential applicants. As specified in the cover letter, any school district (LEA) was eligible to apply for NAPSET services, either independently or together with one other district. Intermediate units and existing state-level networks were also eligible for participation, if applications were submitted with three or four of their LEA members.

3.1.1 Criteria

The central criteria used to select NAPSET clients were readiness for participation and commitment to project goals. We needed to know that our technical assistance efforts would have a strong chance for success. Therefore, staff reviewers were looking for indications that local personnel wanted to work toward the implementation of special education technology, that the environment was conducive to change, and that the district was willing to commit both local resources and administrative support

to the effort. The applicant was asked for assurances that specific "requirements for participation" would be met, including willingness to sign a Cooperative Assistance Agreement, to assign a local coordinator to oversee project activities, to involve parents in project activities, and to provide release time for local staff to serve as members of a Local Planning Team.

Variables considered in the selection process included the type, nature, and extent of technology use and the organizational status of the applicant. Recognizing that funding for and implementation of special education technology is often coordinated above the individual district level by intermediate educational units or state agencies, we felt such agencies were logical foci for our assistance efforts. Variations in organizational status also offered a useful research opportunity, as we could explore effective assistance strategies at different organizational levels. Thus we sought a client pool with a diverse range of characteristics, to reflect a cross-section of schools throughout the country.

3.1.2 Selection

Approximately 250 applications were received by the due date of July 31, 1984, from which a total of 30 sites, involving 38 school districts, were selected for participation in Option Year I. Applications were processed through a multi-stage review during August. As a first step, each application was read independently by three NAPSET staff members and ranked on four critical dimensions: commitment, sophistication, resources available, and general appropriateness as a NAPSET client. These rankings, including baseline demographic information and general review comments, were entered into a microcomputer and analyzed.

A pool of approximately 50 finalists, representing a diverse range of characteristics, were selected by the NAPSET staff, using data collected in the initial review. When additional information was needed, telephone conversations were conducted with LEA representatives. By September 1, 1984, 30 final sites were selected, reflecting widespread geographic distribution and a range in demographic characteristics and technology use. Two intermediate education units, one state education agency and a pair of neighboring districts which chose to work together as a team on the project were included in this group.

Seven sites were selected from this final group to receive the focused attention of project researchers. Those sites and the process of providing assistance to them were to be the subject of case studies, through which we would evaluate the NAPSET project. They were chosen to represent the range of site characteristics in the entire client pool, including one IEU and the state education agency.

3.2 Assistance Provision

Following the final identification of client sites, phone calls to each site were made by the NAPSET liaison staff member. The first call went to the individual identified on the application form as the primary local contact and a second call was made to the Superintendent of Schools. The purpose of these calls was to announce the fact that their school district had been selected for project participation and to review expectations and timelines with local staff. The call to the Superintendent confirmed the administration's commitment and support of project activities.

On September 1 an information packet was sent to each site, including a formal selection announcement and expanded overviews of the project, its resources, and its proposed activities. In addition, the October Orientation Meeting was described and invitations were extended to two LEA representatives. It was our hope that the LEA attendees would eventually become the Local Co-Coordinators, representing both the administrative and teaching staff. Clusters of three and four LEAs were also invited to send representatives of the "sponsoring" intermediate education unit. Each LEA was asked to complete and return an enclosed "District Profile" before the October meeting. An information form identifying Orientation Meeting participants and travel plans was also enclosed for completion and return.

NAPSET liaisons contacted the State Directors of Special Education and other interested parties (e.g. RRC's, existing education networks) to inform them of each client's participation and to explore collaboration possibilities. Information received through these contacts, together with data from the District Profiles, was used to initiate planning of services to each client site.

3.2.1 Orientation Meeting

The first full year of client assistance began with a two-day Orientation Meeting attended by representatives from each client site. The meeting was held October 14-16, 1984 at the Radisson Hotel in Danvers, MA.

The Orientation Meeting was designed with a long list of goals to be addressed. These can be divided into three general categories: informational, interactional, and attitudinal goals.

Informational Goals:

-- To give an overview of the NAPSET project, clarifying its purpose, goals, expectations for local districts, and what participating districts could expect from the NAPSET team.

-- to give an overview of the project's "planning for change" orientation and describe the role envisioned for the Local Planning Teams.

-- to offer workshops on specific ways advanced technology can be applied to special education, e.g., word processing programs, telecommunications, management software, etc.

-- to provide an array of sophisticated hardware designed to accommodate the special requirement of a variety of physically handicapping conditions.

Interactional Goals:

-- to allow NAPSET staff to begin to get to know the people they would be working with in the field, and vice versa; to begin to familiarize themselves with the particular conditions in each district.

-- to allow NAPSET sites to meet their counterparts in special ed departments around the country, to compare experiences, exchange information, and establish a basis for future contact.

Attitudinal Goals:

-- to make people feel "special" -- that they were chosen from applicants all over the country for involvement in a federal project, flown to Boston for three days of activities designed specifically to address their needs, etc.

-- to make people feel "lucky" -- that NAPSET was an opportunity to accomplish something they might not otherwise have taken on.

-- to make people feel energized and empowered by the opportunity that was offered -- that NAPSET resources would enable them to accomplish things they might not otherwise accomplish.

-- to instill confidence in the NAPSET staff and the belief that the districts' association with us would be profitable.

Each meeting participant received a notebook when s/he registered containing the orientation meeting program, descriptions of project staff and other participating districts, summary project and evaluation descriptions, project timeline, expectations for participants, a description of the NAPSET database, workshop handouts, and various forms to be filled out at different times during the project (travel expense record, meeting evaluation, CAA, etc.). We found that this notebook, while designed for use at the meeting, was used as a resource on site for project participants throughout the year.

Orientation meeting goals were met in a variety of ways over the three days. Formal presentations and workshops, small group meetings of client sites, individual meetings between liaisons and their client districts, and informal conversations between NAPSET

staff and district representatives all helped to communicate important project goals and information throughout the meeting. Each liaison met individually with representatives from his or her client sites to discuss district conditions and their particular needs, begin to outline possible CAA goals, and plan for the first site visits.

NAPSET researchers also met with representatives from the case study sites to explain the purpose of the project's research component and the role they would play in it, and to gather more background information about their districts.

At the end of the Orientation Meeting LEA representatives were charged with returning to their districts to put together a Local Planning Team. Liaisons planned to begin their site visits early in December. Before that time the local co-coordinators were to have identified four to six additional people to serve on the Local Planning Team, and convened the team once to fill out a Technology Implementation Tool (see below).

LEA representatives had met in small groups with their liaison during the meeting to discuss criteria for the selection of effective team members. NAPSET staff stressed the importance of representativeness: of including people from several special education constituencies, including teachers, administrators, parents, and people involved with students of different handicapping conditions. In addition, certain non-special education personnel were suggested: the district computer coordinator, members of the local computer committee, community leaders, school board members, and administrators who served as liaisons between regular education and special education. Early adopters of technology were sought, as well as active, energetic, enthusiastic if less experienced computer users. LEA representatives were asked to consider the group skills, local political clout, and time availability of potential team members as well.

We learned from the pilot test that it was important for the LPT to meet together before the NAPSET liaison arrived, to get a sense of themselves as a team and discuss local understandings and expectations of the project. To facilitate this process and help the newly formed teams establish appropriate project objectives liaisons supplied their client districts with a Technology Implementation Profile (T.I.P.). This form was developed specifically for the NAPSET project to help local participants assess their current status with regard to technology use and identify their strengths and weaknesses in relation to conditions which affect the implementation of change. The process of working through the T.I.P. got team members working together immediately on a concrete task, as well as identifying important district characteristics relating to project goals; planning procedures; knowledge, skills and experience with technology use; resources and support; and orientation to change. The results of the T.I.P. helped the LPT to identify and formulate appropriate project goals for the district.

3.2.2 On-Site Assistance

Option Year I clients received up to five days of on-site assistance, which included district visits from both liaisons and outside consultants. In practice, not all sites took advantage of the full five days; the average number of on-site assistance days was four.

Liaisons' first site visits took place in late November and early December of 1984. These initial visits were devoted to reviewing site conditions with the entire LPT, establishing a consensus about the districts' areas of greatest need in relation to special education technology, and coming up with strategies to address these needs which were appropriate in the context of the district. Liaisons used the content of these discussions to guide their drafting of each district's CAA, which detailed the need areas and spelled out step-by-step activities designed to address them. These documents were sent to the districts for review and signatures from the LPT co-coordinator and district superintendent. They were meant to guide the team's activities in the coming year.

On subsequent site visits liaisons provided a number of different types of assistance, which varied according to the needs and interests of the districts. These included:

Training in planning for change: In almost all sites LPTs received an introduction to the principles behind the Concerns-Based Adoption Model (CBAM), a conceptual model developed at the Texas Research and Development Center for Teacher Education, which explains the way people and institutions respond to the introduction of innovation in their organization. This model suggests that innovative activities should be developed around the specific existing level of use of the innovation, with attention given to the particular stage of concern of the people affected by the innovation. In some cases, liaisons did a CBAM overview on the first site visit, to assist in the development of appropriate district goals. In other cases, it was done later and served to sensitize the LPT to the considerations necessary for making long-term, lasting changes in their districts. These CBAM principles encapsulated the essence of NAPSET's approach to the implementation of change in schools.

Presentation of concrete technology-related information: Liaisons offered informational presentations in a number of areas of technology to the LPTs themselves and to larger groups within the district as well. These presentations covered such topics as:

- a general technology overview and slideshow
- an introduction to microcomputer systems
- software and software review procedures
- adaptive/assistive devices
- telecommunications
- administrative applications of advanced technology

Demonstration of technology products: The NAPSET library contained many pieces of software acquired for demonstration purposes. Liaisons often took these products on their site visits to enable an LPT to preview several software packages before making a final purchasing decision. Demonstration hardware was also sometimes taken along, to the extent that it was available and portable. (A substantial hardware demonstration session was included at our Orientation Meeting since we knew that such on-site hardware demonstrations would be difficult to coordinate.)

Development of technology-related skills: Liaisons also provided hands-on training in many of the applications mentioned above, often in conjunction with informational presentations. If, for example, a district decided to subscribe to a telecommunications system, the NAPSET liaison might give an informational overview of the uses of telecommunications, then proceed to train a group of people in the use of their particular system. In another case a district might have requested a general introduction to IEP systems, then on a subsequent visit asked the liaison to train them in the use of the program they purchased. Considerable training in software evaluation was provided throughout the year, and LPTs sometimes used their liaisons to train other people in the district in technology applications they were themselves already familiar with.

Facilitation of linkage with other districts: Because the NAPSET project put us in touch with many school districts around the country, as well as alerting us to state and university programs, independent research, and industry conventions relating to educational technology, we were able to connect our clients to many other people with similar interests and concerns. NAPSET created an extensive network of people, school districts and organizations involved with special education technology. We tried to make full use of this privileged position by informing our clients of people or organizations which might be of use to them, and encouraging them to share their knowledge and expertise as well. In some cases this meant linking together districts in the same region of the country for a general exchange of ideas; in others cases we connected geographically distant districts which had something in common to share.

Evaluation of district activities: Liaisons often served as outside evaluators of activities which their client districts had undertaken. One district LPT, for example, planned and presented a small technology fair to the special education staff; their liaison attended the fair, then debriefed it with them, offering constructive criticism for their future efforts. In a different situation, several liaisons coached their LPTs on how to make successful presentations to their school boards, and critiqued the proposals to be presented. Liaisons also read and critiqued many district plans for computer use which their clients drafted over the course of the year.

Resource development workshops: A common problem which many of our clients faced was an insufficiency of district funds with which to purchase new technology. NAPSET staff presented many workshops to help client districts identify potential sources of funding for technology in their region, both private and public, and offered many proposal-writing strategies and tips.

On-site technical assistance in Year II can be said to fall into three broad categories: assistance which addressed the process of making educational changes, assistance which provided needed information relating to special education technology, and assistance in building skills toward the utilization of new technology. Year II clients made use of these three kinds of assistance in varying combinations depending on their districts' needs, their current level of use of technology in special education, and the stage of concern of most staff in relation to it.

3.2.3 Off-site Assistance

NAPSET clients received unlimited off-site consultation throughout the duration of the project. Liaisons were available for phone consultations, and could be reached by SpecialNet at any time. Clients could also contact the Information Specialist directly to inquire about information available in the NAPSET database. In addition, the Information Specialist kept an ongoing list of client "interests" and information needs, sending out any relevant material she acquired throughout the year.

Proactive clients regularly telephoned or used SpecialNet to contact their liaison for information and/or advice. These clients often received information packets from their liaison, designed to assist them in making decisions regarding, for example, the purchase of hardware and software, the development of technology management systems, or the integration of software into the curriculum. Sites which were less proactive received less information, although liaisons attempted to contact those sites and check on their progress every four to six weeks.

Client sites were also encouraged to use one another to develop ideas, provide information, and resolve problems. In some cases, individuals actually visited other client sites, but most often clients communicated by phone, mail, and telecommunications systems. One means of keeping up with each other's progress was the institution of a NAPSET "hotsheet" sent to each client site. Sent out only twice during Year II, "NAPSET Bits" was so popular that it became a "monthly" during Year III.

3.2.4 Off-site Support Activities

Providing good technical assistance was much more than an individual effort by NAPSET liaisons during Year II. Although

individuals were ultimately responsible for their own sites, much of the preparation involved in designing appropriate technical assistance strategies was a team effort.

In the early stages of Year II staff meetings (including both assistance providers and evaluators), often lasting the entire day, were held as often as every other week. During these meetings, assistance providers worked out the complex administrative details of providing a variety of different kinds of assistance to 38 client districts scattered across the entire country, and shared individual areas of expertise in special education, technology, and planning to inform each other's efforts at particular client sites. Staff members developed a series of resource folders in areas where demand for information was high. Individuals with strong expertise in these areas presented the workshops to the staff, thereby both training those with less knowledge and receiving feedback on the workshop's form and content from the entire team.

Staff meetings were scheduled at periodic intervals throughout Year II to facilitate communication between liaisons. Here, experiences were shared, problems discussed, and new strategies formulated. These meetings were supplemented by the continuous routing of information received by the information service provider, and thorough site reports recounting liaisons' visits to their respective sites. In this way, even though liaisons were often out of the office, everyone could be kept up to date on the progress of individual sites, and provide feedback to one another where appropriate.

4.0 YEAR III

As in Year II, the primary goal of the NAPSET project in Year III was to provide comprehensive technical assistance to implement technology in a wide variety of special education programs. The underlying philosophy, goals, and general design features of the technical assistance remained the same as in the previous year. Minor modifications resulted from reflections on the input of clients, the evaluation team, and the project officers. Modifications in the structure, as well as the provision of technical assistance in Year III, will be discussed in this section.

4.1 Selection of Clients

As discussed above, 38 districts participated in Year II of the NAPSET project. Thirty (30) sites were chosen to participate in Year III, including 13 "continuation sites," carry-overs from the previous year, and 17 new district sites. To solicit new applications we again conducted an extensive publicity campaign to promote awareness of NAPSET. We paid particular attention to those parts of the country that were not represented the previous year, sending multiple letters and application forms to state agency and intermediate unit personnel, as well as SEA technology

coordinators identified through the Regional Resource Centers. For new sites the application procedure was similar to the previous year. Any school district (LEA) was again eligible to apply for NAPSET services, either independently or together with another district. Intermediate units and existing state-level networks were also eligible for participation, if applications were submitted with three or four of their LEA members. Criteria and variables used to select clients included readiness for participation, commitment to project goals, type, nature, and extent of technology use and organizational status of the applicant. Again the client pool included a diverse range of local districts, reflecting a cross-section of schools across the country.

We also encouraged Year II client sites to apply for a second year of NAPSET assistance. In addition to testing the effectiveness of our assistance model over a longer period of time, continuation sites were to provide a model for an expanded assistance strategy in which they would be required to document a program or practice which appeared "promising," to be shared both within their own district and elsewhere in the NAPSET network. Because only a small number of continuation sites could be selected, applicants were encouraged to describe and justify their second year activities with this focus in mind. The purpose here was to expand the impact of NAPSET services by focusing on the documentation of promising practices for dissemination to other sites, and to experiment with an alternative approach to technical assistance. This strategy we hoped would result in stronger institutionalization of technology programs in the original LEAs, adoption/adaption of successful practices in other LEAs that were not participating in NAPSET, and collection of data regarding the effectiveness of this alternative form of technical assistance. Consequently, sites were selected which demonstrated not only the institutionalization of "promising practices," but a willingness to direct their efforts toward diffusion-related activities.

The continuation sites included six of the seven case study sites from Year II. All case study sites were invited to participate in Year III in order to extend the period during which we could collect data. This was important since many of the activities engaged in during Year II were "planning-related," with implementation of new practices occuring during the second year. One site rejected our offer of a second year of assistance -- their school board refused to approve the necessary release time to continue their participation in the project.

4.2 Assistance Provision

The approach, organizational structure and service delivery mode for Year III were basically the same as those described for Year II in Section III of this report. Once again our assistance focused on planning-related and capacity-building activities designed to promote the institutionalization of technology-related innovations in special education programs. As in Year II, each client site was required to identify a Local Coordinator and a

Local Planning Team with six to eight members representing different education constituencies, and varied perspectives in the district. The LPT participated in the development of the Cooperative Assistance Agreement specifying the mutual obligations of the NAPSET liaison and the LEA, and acted as the driving force in implementing technology in the district.

A comprehensive range of services, with up to five days of on-site assistance and unlimited off-site consultation, was provided to both new sites and continuation sites during Year III. Year II sites which received only one year of on-site assistance continued to receive off-site consultation services in the third year also.

Year III services included all those provided during the first year of assistance -- planning assistance, resource linkage, information provision, demonstrations and consultation -- as well as an increased emphasis on networking. Many Year II sites stressed their desire for more contact with other NAPSET sites in order to share ideas, information, and experiences. We hoped to establish channels of communication that would be maintained beyond the tenure of our project. A number of strategies were employed toward this end:

- A greater emphasis was put on the use of SpecialNet and/or other telecommunications systems for the transmission of information between the NAPSET office and client sites, between client sites themselves, and from client sites to other LEAs across the country. A number of Year III sites included telecommunications, particularly regional electronic bulletin boards and mail systems, in their CAAs.

- Written information was disseminated regularly about happenings at NAPSET sites through the NAPSET "hotsheet."

- A larger number of IEUs, where multi-site assistance at the regional level could be provided, were included in the Year III client pool.

- The Orientation Meeting was designed to focus on project sharing and relationship building through multiple small group gatherings of client sites organized both "regionally" and "topically." Continuation sites were invited to attend the Orientation Meeting and to participate as "peer consultants" sharing information from their previous year of experience.

- A "NAPSET Directory" (describing activities in special education technology at each client site) was developed and distributed.

These networking activities were well received by our client sites, and successfully contributed to the long term impact of NAPSET interventions by facilitating ongoing communication between LEAs around the country.

4.2.1 Orientation Meeting

Following their acceptance for project participation, representatives from each site, including the superintendent, were contacted by telephone to review NAPSET services and expectations. As in Year II, an information packet including a distict profile, a press release, a project timeline, and a description of the Orientation Meeting were sent to all client sites in early July. Two representatives from each new site were invited to attend this meeting, conducted in Boston on August 28-30. Continuation sites were invited to send only one representative this year.

The Orientation Meeting provided opportunities for clients to meet each other, get acquainted with NAPSET staff and consultants, receive additional information about the project resources and available services, gain exposure to a comprehensive range of technologies and their potential applications to special education, get hands-on experience with hardware and software, and begin the process of detailing their own district's assistance plan. The design for the meeting, much like Year II, included small group meetings, divided by region and topical interest, planning times, and individual client sessions with NAPSET staff, in addition to a full complement of presentations, workshops, and demonstrations.

NAPSET clients attended full group sessions at the Orientation Meeting focusing on the intent and structure of the NAPSET project, and the underlying theme, "planning for change." Using the expertise gained from Year II, sessions were planned which addressed specific issues such as Local Planning Team Selection and Team Management. Continuation site participants assisted with these sessions, recounting their problems as well as their accomplishments during the previous years. Continuation site participants also shared their experiences during small group sessions organized by "demographic type" (urban, rural, suburban, IEU) during the first evening of the conference. Their presence and contributions throughout the meeting were both informative and reassuring to clients just embarking on a year of technical assistance.

Concurrent workshops concerning a wide range of technology topics took up much of the conference time. These sessions were conducted by NAPSET liaisons, as well as outside experts associated with The NETWORK, other federally funded special education technology projects, or private hardware and software vendors. Evaluation forms indicated that clients found these sessions, ranging from specific administrative and instructional applications to more general hardware and software overviews, highly informative. Sessions on Logo, computers and writing, and administrative applications were particularly well received. Participants also enjoyed the hands-on hardware laboratory where they could try out a number of sophisticated new adaptive devices and communication aids, as well as more traditional hardware.

Small group sessions with NAPSET liaisons, as well as individual client sessions, provided the foundation for taking initial steps in the development of Cooperative Assistance Agreements. At these meetings clients were able to talk about the specific conditions in their own districts, and the general need areas around which they wished to structure their technical assistance. An inspirational closing address by Dr. John Collins of the Center for Effective Communication sent clients home to their local districts ready to begin the process of establishing a Local Planning Team and implementing a wide range of technology-related changes in their special education programs.

4.2.2 On-site and Off-site Assistance

Most local NAPSET coordinators left the Orientation Meeting with a good sense of who they intended to ask to participate on the local planning team from their district. As in Year II, coordinators were instructed to consider a broad range of constituencies when constructing their teams; however, an increased emphasis was placed on defining, in a broad sense, the goals of the team effort, in order to appoint the most appropriate team members. Individual and group meetings with NAPSET liaisons at the Orientation Meeting were designed to help coordinators to define these goals at the most general level.

Local coordinators appointed NAPSET teams in early September. During their first meetings, prior to the first on-site visit by a NAPSET assistance provider, LPTs filled out a revised version of the T.I.P. used in Year II. This needs assessment instrument was much briefer and easier to use than that of the previous year. By filling out the instrument, LPT members increased their awareness of local conditions relevant to special education technology and to the long range planning process. They then began the process of identifying more specifically the three goals around which they would structure their CAA during the first on-site visit with their NAPSET liaison.

On-site visits with Year III sites took place between October 1985 and June 1986. The earlier start (Year II visits often began as late as December or January) meant that CAA's were drafted as early as November, and clients were ready to begin planning and implementing changes before Christmas. As early as November, several Year III sites had set up new telecommunications systems with local bulletin boards for regional announcements.

In keeping with the process and planning focus of NAPSET assistance, NAPSET liaisons added a new activity, a "planning for change" simulation game, to the large array of workshops and demonstrations developed during Year II. The game, developed in conjunction with a sex equity project at The NETWORK, takes players through the process of introducing and implementing an innovation in a "generic" local school district. Many LPTs decided to play the game during early on-site visits in order to help members develop an understanding of the planning process.

The GAME proved to be an excellent lead into the NAPSET planning workshop (see Year II above) designed to develop team knowledge skills in this area.

All new client sites for Year III were offered five full days of on-site assistance. As in Year II, liaisons provided workshops on software evaluation, adaptive devices, administrative and instructional applications, telecommunications, and simply "technology awareness" in addition to planning assistance. Few outside consultants were required, although The NETWORK's computer consultant, Michael S. Walker, visited several sites to provide assistance setting up hardware and training users in telecommunications and other administrative applications.

Continuation sites participating in Year III received anywhere from two to five days of on-site assistance depending on the extent of their needs. Some continuation sites had established clear direction and working procedures for getting things done in the first year, so they needed very little assistance from us in the second. They had been "launched," so to speak, the year before and were "flying" pretty much on their own, with occasional consultations. Other sites had spent most of the first year establishing their goals and priorities and learning how to work together as a team; they were just getting involved in the substance of their activities in the second year and needed our assistance just as much now, but in a different way. Planning assistance, technical information, and training continued to be provided to these sites, but a primary focus of assistance was in documenting and disseminating "promising practices."

Promising practices varied a great deal from site to site. Fairbanks, Alaska, initiated the dissemination of promising practices at the Orientation Meeting in August by offering a workshop on the development and use of a customized IEP format using Zardax software. They have also begun to distribute a monthly SPED tech newsletter to all project participants which was developed through NAPSET in Year II. Ramona/Julian plans to offer training workshops in how to set up a planning team and address issues relating to technology use in special education to twelve of their associated neighboring districts. Rome, Georgia, has a comprehensive district plan for the use of technology in their special education program which they are disseminating. Mesa, Arizona, has a procedure for pilot testing a word processing application with LD students to build support for technology in Special Education in the district. Almost all the sites needed help determining how to document and disseminate their successful efforts. This was, thus, a primary concern of their liaisons.

As in Year II, NAPSET liaisons provided unlimited off-site consultation. The Information Specialist maintained a list of sites and their information needs, periodically sending any relevant information in the NAPSET database. Those sites who were most proactive telephoned or used their telecommunications system to make inquires about hardware and software purchases, the implementation of training programs, research data on CAI

effectiveness with special needs students, and many other topics. Where clients were less proactive, liaisons made a special effort to call and inquire as to the LPT's progress every four to six weeks.

As mentioned above a special effort was made to link NAPSET client sites with each other during Year III. "NAPSET Bits," a hotsheet of NAPSET information tidbits, was sent out monthly to all client sites. Clients were encouraged to use "NAPSET Bits" to let others know of their successes as well as their problems. Clients then contacted one another directly to find out more about successful programs, or to provide solutions to problems they may have already resolved in their own district.

PART II: EVALUATION

5.0 EVALUATION OVERVIEW

The NAPSET project, as described in Part I of this report, involved both the provision of technical assistance to district and regional special education programs around the country, and the evaluation of those services to determine the most effective assistance strategies. Part II of this report describes the evaluation portion of the project: the theoretical framework, the evaluation design, and the results of the cross-case analysis. Seven in depth case studies of NAPSET client sites provided the bulk of the data for the evaluation. These were supplemented by mini-case studies or vignettes that represented particularly interesting contexts, implementation efforts, or outcomes of the assistance provided.

5.1 The Technical Assistance Model

The goal of the NAPSET project was to:

> provide comprehensive, flexible and responsive technical assistance to increase the knowledge, skills, and confidence of local school district personnel as they implement technology within special education programs (The NETWORK, Inc., March 1983).

The technical assistance model designed by NAPSET was based on a decade of significant research focusing on the school improvement process, as well as The NETWORK's sixteen years of practical experience providing assistance in school settings. Drawing on the earlier work of Ronald Havelock (1973) on external change agents, in addition to the more recent studies of the federally funded Research and Development Utilization Program (Louis et. al., 1981) and the many other federal, state and local efforts to support school improvement (Crandall et al., 1982), the NAPSET staff developed a sophisticated technical assistance plan. These studies were chosen as the most appropriate on which to build the NAPSET technical assistance model because they resembled most closely the type of school improvement projects NAPSET hoped to support.

The Research and Development Utilization Program (RDU) was designed to assist schools in adopting and implementing a variety of "proven products and practices" in the areas of basic skills and career education. Unusual in its commitment to both the dissemination and use of R&D products, and the development of local capacity to solve problems, the RDU program combined the use of technological (packaged) information and people/process support. The result was a very effective school improvement strategy(Louis et. al., 1981). Recognizing the success of the RDU projects, NAPSET adopted their three main components: the

provision of information, person-to-person technical assistance, and an emphasis on a carefully designed local problem-solving strategy.

The RDU strategy required that a participating school establish a "problem- solving team" to work with an outside assistance provider in identifying problems, examining various solutions, and selecting and implementing a new program or practice. These teams were central to the effort to provide intensive face-to-face assistance, encourage the necessary faculty involvement and administrator support, and develop the school's on-going capacity to repeat complex problem-solving processes and improvement strategies (Louis et al., 1981).

Intending to use a similar strategy to address technology-related problems, NAPSET placed "problem-solving teams" at the center of its assistance approach as well. Local planning teams (LPTs), composed of six to eight teachers, administrators, and/or specialists, became the primary recipients of NAPSET's technical assistance and the primary agents of the districts' change efforts.

NAPSET incorporated a number of other features of the RDU Program, as well as many discovered to be important by the Study of Dissemination Efforts Supporting School Improvement (hereafter referred to as the Dissemination Study) (Crandall et al., 1982) into its technical assistance design. In addition to establishing local planning teams, districts were required to appoint two project co-coordinators. The co-coordinators' job was to provide internal leadership for the improvement effort, a factor found to be critical by both the RDU and Dissemination studies.

Second, NAPSET required districts to provide five full days of release time for LPT members. The RDU Study had found that available release time was a key factor in mobilizing resources for a school level problem-solving process. Not only does release time allow teachers the time and space to focus on a new practice outside their regular teaching duties, it requires the district(or regional unit) to commit financial resources to the project, an act which often fosters greater commitment on the part of upper level administrators.

The five days of release time corresponded to NAPSET's agreement to provide each client site with up to five days of on-site assistance and support. Recognizing the importance of substantial assistance over time, the five days of assistance were spread out over the course of the school year. Moreover, over one-third of the first year sites received a second year of assistance, providing information about the relative merits of maintaining assistance for an even longer period. NAPSET wanted to avoid the problem of providing only front-end assistance which focuses solely on the development and/or adoption of practices, while failing to address implementation and institutionalization,

two critical phases in the school improvement process. As noted in the Dissemination Study, "a one-day follow-up visit from an external consultant is often worth three days of initial training" (Crandall et al., 1982).

NAPSET liaisons provided their client sites with information, consultation, and training in the areas of problem-solving, planning, and technology applications. Much as in the case of the RDU projects, all assistance was provided within a problem-solving and planning framework which required that LPTs engage in a structured series of activities. These activities, included, among others:

1. systematic needs assessment to identify priority areas for special education technology;

2. the examination of possible solutions to local problems;

3. construction of a Cooperative Assistance Agreement (CAA) identifying goals and activities, and including the specific responsibilities of NAPSET and the district team;

4. implementation of these activities; and

5. an evaluation of the specific activities, as well as of the entire NAPSET process.

The degree to which client sites successfully engaged in this problem-solving and planning process was one focus of the evaluation component of the project.

A final critical component of the NAPSET technical assistance strategy was the individualization of services. Previous studies of school improvement strategies indicate that assistance must be tailored to the needs and concerns of district personnel if it is to have any long term impact (Loucks & Hall, 1979). Since no two districts had identical needs, the NAPSET assistance model was designed to provide each client with an individualized complement of services.

Although all NAPSET LPTs were required to engage in a similar problem-solving process, the specific technology-related activities chosen to meet a district's need were quite varied. Flexibility was built into the technical assistance model by allowing LPTs to choose from a broad array of possible goals that included increasing technology awareness among staff and administrators; developing management systems for the acquisition, evaluation, and distribution of software; implementing a computerized IEP system; implementing new instructional applications; developing long range technology implementation plans. Through the problem-solving process clients were able to identify goals and activities appropriate to the needs and conditions of their particular district.

5.2 The Evaluation Component

As suggested above, the NAPSET staff paid great attention to the findings of previous studies of dissemination efforts supporting school improvement in designing the NAPSET technical assistance model. Noting that the RDU study found that the dimensions of an intervention are as strong, if not stronger, than site conditions in affecting the impact of a school improvement project, NAPSET set out to test its technical assistance model under a wide variety of conditions. The evaluation component of the project was designed to assess the impact of these varied site conditions on the success of the technical assistance process.

Client sites varied with respect to size, available resources, technological sophistication, experience in making change, and readiness to make change. In addition, sites were chosen among Local Education Agencies (LEAs), Intermediate Educational Units (IEUs), State Education Agencies (SEAs), and cooperating local districts to test the effectiveness of the assistance model at different levels of organization. The case study sites included five LEAs, one IEU, and an SEA, chosen precisely because of their diverse local characteristics and organizational structures.

We expected the NAPSET evaluation to confirm a number of findings from the Dissemination and RDU studies. These included:

- the significance of person-to-person assistance;
- the need for sustained assistance over time;
- the importance of faculty involvement and administrator support; and
- the essential role of internal leadership to making the project a success.

However, we were most concerned with differences which might arise from the technology focus of the project. Neither the Dissemination Study nor the RDU studies had included technology-related projects. We predicted that technology was different enough from other curriculum innovations that the nature of the innovation would impact the adoption-institutionalization process. We noted that technology differed from other innovations in at least three respects:

1) the use of technology is not really a single innovation, but rather many different innovations, many of which are "bundled;" i.e., a single innovation may have several component parts;

2) the use of advanced technology in education, particularly special education, is so new that few validated or promising practices are available for adoption by interested school districts; and

3) technology changes so rapidly that it is difficult for school districts to keep up with new information and applications.

With these concerns in mind, we articulated three questions, which provided the initial focus for the evaluation:

1) What factors in the internal or external context affect the outcomes of the technical assistance process? In particular, could we identify particular site specific conditions that had direct impact on the implementation of technology-related innovations?

2) How does the choice of particular goals and activities affect the outcomes of the technical assistance process; i.e., considering the wide variety of possible technology-related innovations, are there more or less appropriate goals for an individual district, and how can these be identified?

3) To what extent were new technology practices implemented and institutionalized by NAPSET clients?

As we worked through our conceptual framework we revised these first three questions, and added a fourth (see Section 6). The fourth question focused on the impact of the individual technical assistance providers, and was phrased as follows:

4) Given that NAPSET provided face-to-face assistance, did the liaison's personal style or area of expertise have a significant impact on the outcomes of the technical assistance process at individual client sites?

In evaluating the success of the NAPSET interventions we were concerned with three sets of outcomes:

1) the extent of development and/or implementation of new practices in the area of special education technology;

2) the degree to which these new practices were institutionalized; and

3) the degree to which districts institutionalized a process for continuing to address issues of special education technology on an on-going basis.*

*While we clearly recognize its importance, student impact was not considered a relevant outcome at this point in the project's tenure. Our concern was with the implementation of new

practices and processes. Assessing the impact of these on student achievement requires a study of longer duration, with an entirely different set of outcome variables.

These three types of outcomes are not independent of one another, but imply a hierarchy of success. Those sites that accomplished only goals in category 1 were considered less successful than those that were able to both implement and institutionalize practices (categories 1 and 2), while those that were able to accomplish all three sets of goals, the implementation and institutionalization of both practices and processes, were considered most successful. Moreover, within each of these categories of outcomes some clients were more successful than others.

We refer to these three sets of outcomes throughout the cross case analysis (Section 7.0), providing a more focused discussion in our conclusion (Section 9.0).

6.0 METHODOLOGY

6.1 Methodological Theory

The NAPSET project chose an explanatory case study approach to research, analyze, and evaluate the technical assistance process. Our approach was developed on the basis of Robert Yin's work on case study methodology and the work of Matthew Miles and Michael Huberman on qualitative data analysis. Case studies were considered the most appropriate research strategy because of the kinds of questions the project was asking and the type of explanations it hoped to generate; namely, an understanding of this particular technical assistance process in a variety of district and multi-district contexts.

The Standardized Case Method, as described by Yin (1980; 1981), was developed specifically to study a case in its context , when the impact of single variables are less significant than the combined influence of multiple variables which define the context in which it is found. Case studies are appropriate when the phenomenon or "case" cannot easily be separated from its context and there is reason to believe the context has significant impact on the case. In NAPSET the "case" was the technical assistance process as defined by technical assistance strategies, the expertise and "style" of the assistance provider, and the intensity and duration of the assistance.

Case studies are particularly useful when the "case" to be examined is a process rather than a thing, and when the case is something which may change over time. Process and change, which tend to confound more quantitative research strategies, can be documented and incorporated into the analysis of a qualitative case study. The case study approach is especially useful for evaluative studies from which policy implications are to be drawn because they yield information about the interaction of multiple variables and can be used to establish causal relations between them. They are less useful for studies which seek to determine the incidence of particular variables or to quantify multiple factors for statistical analysis. In NAPSET's case, this kind of data would have been difficult to obtain and ultimately lessen lightening than vigorous qualitative analyses.

Yin distinguishes three types of case studies in his work: exploratory, descriptive, and explanatory. The first type begins with hypotheses about how various factors may influence a case and some questions about the case; these questions are pursued through the exploratory case study to clarify the case content and confirm or disconfirm hypotheses. The second type poses no questions and offers no explanations, but simply provides a description of the case. (As Yin points out, even purely descriptive case studies are structured around some implicit theories about what is important to describe, however.) The third type, the explanatory case study, tests propositions and theories. It seeks to uncover a causal sequence of events and,

through cross-case analysis, develop an explanation to account for the outcomes of the case in different contexts.

In their first iteration, the NAPSET case studies were largely descriptive: site data were gathered and organized into relevant categories with a standard narrative format. Researchers then worked toward the development of causal arguments and explanations within each case through cross-case analysis, and from there to a larger understanding of the most effective means of providing technical assistance in the area of special education technology. The case studies we ultimately produced were explanatory in nature.

It is important to note at the beginning of this section what kind of research the NAPSET project was and was not engaged in. This was not a basic research project, although its findings have many implications for such research. It was an evaluation of a technical assistance model in use in a variety of educational settings. Researchers were evaluating the effectiveness of this model and looking at the impact of different contexts on the effectiveness of the model. As such, data collection focused on the provision of technical assistance and its impact in different settings.

Case studies are not ethnographies; they are focused analytic descriptions of a particular phenomenon in its context. Yin points out that case studies need not involve vast amounts of field work, rather he stresses the value of multiple, brief, iterative data collection episodes (Robert Yin, presentation at the Northeast Regional Resource Center Program Evaluation Workshop, March, 1986). This was the approach used in the NAPSET evaluation. Researchers made one two-day visit to each case study site, and gathered subsequent site information through a series of focused interviews with key figures on site over the course of the project. Because the evaluation focused on the interaction between technical assistance providers and their client sites, a large portion of data was gathered from the liaisons through participant observation during team planning sessions, and through direct interaction with them. (The terms "technical assistance provider" and "liaison" are used interchangeably throughout this report.)

Researchers interacted with assistance providers on several levels, and it is methodologically important to distinguish the kind of data that was obtained through these different kinds of interactions. First, researchers observed liaisons in their at home (vs. on-site) planning activities and participated in all project meetings to get an understanding of how liaisons approached their clients and developed their assistance strategies, what strategies they used, how they interacted with each other and talked about their clients, and what difficulties they faced in the implementation of their tasks. Second, we used them as sources of descriptive data about the sites themselves, gathering these data systematically through site reports, questionnaires, and information matrices which they were asked to

complete. Third, we asked them to reflect upon the technical assistance process from time to time, and on particular aspects of that process. Toward the end of the project, we also sought their responses to our emerging analyses.

The analyses themselves, however, were developed on the basis of information from the first two categories and from the sites, not from the liaisons' personal reflections. Interpretive remarks were used to identify additional information to gather and to stimulate analysis, never as a primary source of data. Researchers established rigorous procedures for checking and rechecking the specific data upon which analyses were based, and always sought multiple perspectives to guard against individual bias. Contradictory information was investigated thoroughly to account for differences of opinion and only when a clear picture of events emerged was information transformed into analyzable data.

Thus while we worked closely with the assistance providers, and obtained a good deal of contextual information informally, we were careful to distinguish between interpretive and non-interpretive data and to quantify our hard data on matrices for systematic evaluation (Miles & Huberman, 1984).

The NAPSET evaluation was somewhat unusual in that researchers did discuss their observations with the liaisons, and in some cases this affected the kind of assistance that was provided. NAPSET was specifically designed to make use of the ongoing evaluation in this way: to help assistance providers be more conscious of their interactions with clients and to refine the assistance model over the course of the project. As such, it was a formative as well as a summative evaluation effort.

There is a case for arguing that discussion between researchers and liaisons affected the assistance process and, therefore, impacted overall project outcomes. These discussions illustrate one way in which the NAPSET evaluation differs from pure research. We contend that researcher/liaison interaction did little to affect outcomes at individual sites, however. Note that researchers never made substantive recommendations about technical assistance provision; they simply reflected their observations back to the liaisons. (Indeed, researchers did not feel qualified to make substantive remarks, as neither had experience in training or technical assistance.) Note also that outcomes of the case study sites, which were the subject of the most discussion and analysis, were decidedly unspectacular; some non-case study sites had markedly more success. This suggests that more site analysis on the part of the liaison is not the critical variable leading to successful implementation of special education technology.

We believe that researchers' questions and observations affected the assistance provided to the extent that they caused liaisons to reflect on the various aspects of the assistance process more than they might have otherwise. They paid attention to the

process as a whole, rather than only to the individual sites that were the focus of the case studies. This atmosphere of reflection, more than any particular kind of information or observation, had the most impact on the NAPSET project. It provided an opportunity for liaisons to work through many of the questions they had about their sites; questions that might not have been resolved without the extra interest that researchers paid to them.

NAPSET researchers drew on the qualitative data analysis techniques of Miles and Huberman (1984) to make sense of information gathered in the case studies. Miles and Huberman emphasizes the importance of engaging in analytic activities early in the research. Their approach includes the development of a conceptual model of the case process to guide data collection, ongoing data reduction analysis to identify unanswered questions and areas for focused attention, and the reformulation of research questions in light of understandings gained in the field. Our research and analytic methodology followed these cyclical interactions of data collection, data-reduction, display analyses, and refocusing of the research questions. This technique is designed to find and focus on important analytic questions early in the research process, to avoid the accumulation of irrelevant data, and to provide the opportunity to pursue unanticipated findings which ordinarily do not come to light until late in the research process. Specific analytic techniques are highlighted in the next section.

6.2 Development of a Conceptual Framework

6.2.1 The Pilot Test

Project evaluators began their work during the pilot test by documenting the assistance provided to three associated school districts in southern New Hampshire prior to the beginning of the first full year of NAPSET assistance. The purpose of the pilot test, as described in Part 1 of this report, was to develop useful and effective information gathering strategies and to focus evaluation research through the development of an issues guide, as well as to assess the assistance strategies developed by the staff. Assistance strategies were revised in light of our experience with the pilot test; a discussion of these revisions can be found in Part 1 of this report.

Between June and October case study researchers accompanied the NAPSET team as they oriented the pilot sites to the project, oversaw the completion of district profiles and development of Cooperative Assistance Agreement drafts, made the first on-site visits to meet with the districts complete planning teams for the first time, negotiated the CAAs, and set up plans and procedures for the next several months' activities. (See Pilot Test Plan for details of orientation, CAA development, and on-site technical assistance.) During this period, researchers refined data collection techniques: standardized note-taking formats, established procedures for recording all contacts with the sites,

decided which on-site technical assistance activities were important to observe in person, and developed procedures for debriefing the technical assistance providers when no observers were present.

We also gathered a considerable amount of background information on the pilot sites in order to understand the context within which decisions were made and policies implemented relating to technology in special education. Our aim was to identify those factors which were most likely to affect the implementation of the technical assistance plans. Toward that end we conducted extensive telephone interviews with pilot site principals, special education administrators and teachers, and other staff involved with technology in the district. From these interviews and The NETWORK's previous experience studying the process of change in schools, we developed a lengthy issues guide to direct our inquiries at the case study sites. We also reviewed this issues guide with each of the NAPSET liaisons to include their insights into the technical assistance process. The result of this process was an outline which could serve as a research strategy for analyzing contextual factors in each district, as well as orient our evaluation of the assistance provided (see Appendix A).

Throughout the pilot test activities, the evaluation team attended all staff meetings, playing the double role of researcher and evaluator. While the rest of the team was responsible for developing and implementing a variety of technical assistance strategies and procedures, we observed and documented this process so as to thoroughly understand the different aspects of the technical assistance models. As evaluators we tried to maintain a longer view of the process. We kept an ongoing list of questions about the project, and offered these to the rest of the NAPSET staff for reflection. We conducted participant evaluations at each meeting between NAPSET staff and the pilot sites, and presented the results of these at staff meetings. In this way we helped to identify potential problems in technical assistance procedures before they became intractable, and reaffirmed the successes that resulted through the experience with the pilot sites. At this point in the project our role as evaluators was decidedly formative.

6.2.2 Learnings from Pilot Test

The pilot test indicated specific ways we could improve our documentation and evaluation procedures, as well as suggesting more effective ways to approach the assistance process. For example, the NAPSET staff edited, clarified, and coordinated our early information gathering instruments, and developed a District Profile and Implementation Guide that more effectively complemented the original application form. These forms, when completed by clients at the start of their association with the project, provided assistance providers with a solid foundation of background information from which to begin drafting Cooperative Assistance Agreements.

We also reviewed our issues guide in light of the pilot experience, and reorganized and prioritized questions to reflect a more solid conceptual framework developed to analyze the assistance process [see below]. From this framework we devised a set of organizing research questions which guided our site visit and evaluation inquiries. While we were conscious of remaining open to new insights about the assistance process, it was important to limit our issues guide and identify key research questions so that our time on site could be used effectively. Both Yin (1980, 1981) and Miles and Huberman (1984) discuss the need to pre-specify much of the data to be collected for case studies. The pilot test helped us to clarify the factors with most significant impact on the assistance process and focus our attention on these in our data collection.

It also helped us to avoid collecting irrelevant information. It become clear that if we did not devise some procedures for focusing our data collection activities, and for ongoing data reduction and analysis, we would be faced with a mammoth task of data reduction at the end of the project year before we could even begin to think about analysis. In accordance with Miles and Huberman, we established a procedure at the beginning of Option Year I (which was continued throughout the project) for conducting periodic re-assessments of our research questions: to revise, clarify, and refocus our attention on new aspects of the assistance process in light of information recently gathered, so that our data were organized according to issues and amendable to further analysis at a later date (Miles & Huberman, 1984).

6.2.3 Refinement of the Conceptual Framework

As noted above, a major learning from the pilot test was that our issues guide did not in fact "guide" our inquiry, since it was more of a "laundry list" of possible relevant factors than an outline of primary factors that would indeed be important in understanding the assistance process. Therefore our first step in the evaluation design for Option Year I was to construct a conceptual framework to focus our inquiries. Using our knowledge of the change process, as well as information gathered from the assistance providers and key participants at the pilot LEAs, we developed a framework to show the relationships among what we believed were the key variables in the technical assistance process. We used the conceptual framework to guide our inquiry, revising it as necessary as we continued to collect and analyze our data. Our primary interest was in how computer technology could be successfully implemented in a variety of special education programs. The conceptual framework, illustrated in Figure 1, showed the interaction of key variables over time, focusing attention on the implementation process and the outcomes of that process. We began with the independent variables which impinge on implementation -- the first, <u>external factors</u>, including the demographics of the district, state, and intermediate unit policies, and available resources; second, the structure and dynamics of the LEA, labelled here as <u>internal</u>

context, third, the nature of the innovation itself, and fourth, the nature of the technical assistance model developed by NAPSET (see Part I). Each of these factors we believed would affect the implementation process: the construction of a local planning team, the initial development of the CAA and the procedures for carrying out this plan, and the amount of support administrators, teachers, and parents would give to the effort. We assumed, however, the impact of the technical assistance model would be mediated by the individualized technical assistance designed to meet the needs of each client site.

We expected that the implementation of the technical assistance plan would have two types of outcomes: immediate changes in the SPED program and long range effects on the school district. In addition, the NAPSET proposal specified a third outcome, the development of successful technical assistance strategies. Adjustments made to the CAA and changes in teacher attitudes and practices were defined as implementation outcomes, while changes in organizational rules and norms providing for institutionalization of new practices, increased effectiveness with students, teacher satisfaction, and professional enhancement were considered final outcomes. Final outcomes also included unanticipated side effects such as increased job mobility, disrupted coherence with schools, and changes in social relationships within the classrooms as a result of the introduction of technology.

The third outcome, descriptions of successful technical assistance strategies, would be the result of our evaluation. A number of variables already appeared salient as technical assistance providers worked with the pilot sites. These included the choice of goals and activities at individual sites; the relative emphasis on substantive information or process concerns; and the amount of assistance provided.

Having laid out this conceptual framework, we developed a set of explanatory research questions. These questions covered four main categories: the context of the LEA as a social system including internal and external factors; the characteristics of the technical assistance provided; the implementation process and implementation outcomes; and the ultimate outcomes of technical assistance (see Section 5.2 above).

These questions, like the conceptual framework, were revised and more clearly focused as we began to collect and analyze our data [see data analysis below].

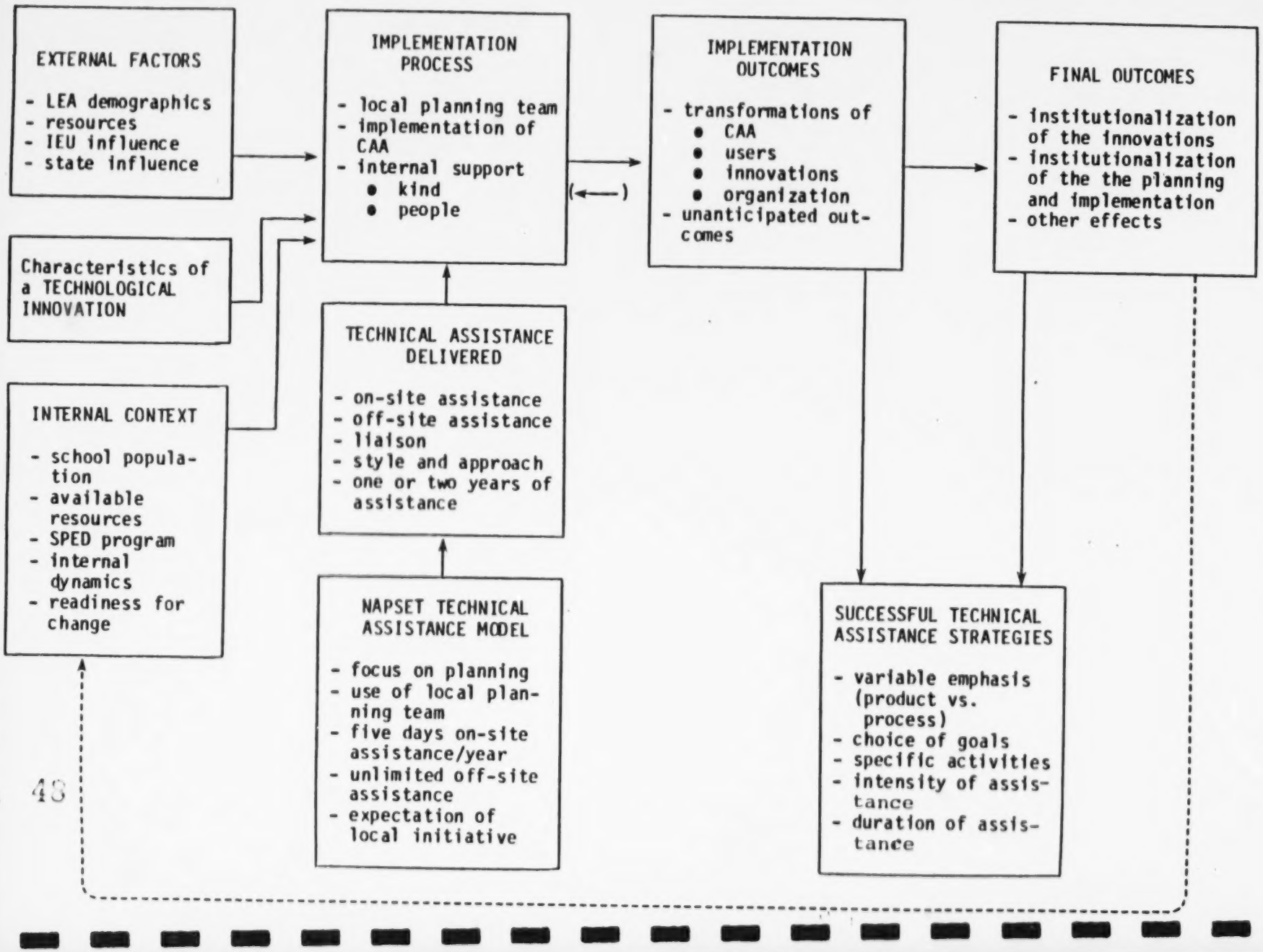
6.3 Site Selection

Seven LEAs* out of a total of 38 Year I sites were chosen to be followed as case studies. A number of criteria were used to create as varied a sample as possible. Since our goal was to describe a successful technical assistance model which could be tailored to many different contexts, we looked for LEAs that

varied in geography, demography, technological sophistication and resource availability, and organizational structure.

*Representing six clients; two LEAs were associated with a single I.E.U.

FIGURE 1
CONCEPTUAL FRAMEWORK: TECHNICAL ASSISTANCE FOR SPECIAL EDUCATION TECHNOLOGY



Since we were interested in the way in which educational collaboratives could promote technical assistance, we chose two sites associated with the Oswego County Intermediate Educational Unit and one LEA associated with a northeast State Education Agency. The SEA itself was also included in our sample. The Oswego sites included Fairleigh, an upper middle class suburb, with fairly extensive technological resources, and Hollis, a small school district, mixed rural and suburban, with scarce resources.

Other sites included Upton, a large midwestern urban school district; Molina, a mixed rural-suburban district in the Southwest; and Concordia, a medium-sized southern port city. Upton shares characteristics with many aging industrial cities of the northeast with shrinking financial resources, while Molina represents the economic expansion and growth of the sunbelt, and has a reputation for educational excellence. Ethnic and racial diversity were sought in the Molina, Upton, and Concordia districts, while rural concerns were addressed in Hollis and the "Northeast" SEA. All of the districts chosen demonstrated a high level of interest in and commitment to the goals and requirements of the NAPSET project. The level of use of technology within these SPED programs varied widely both across sites and internally. Fairleigh teachers had access to a broad range of hardware and software, while Upton teachers could not get the few computers they did have out of storage. No site was exceptionally sophisticated in the use of technology.

An additional criteria for selection involved the assignment of NAPSET technical assistance staff liaisons. Because past studies have shown that the personalities, perspectives, and personal skills of individuals providing assistance can affect the project's success (Louis et al., 1981; Rosenblum & Louis, 1981; Schmuck, 1968), we wanted variation in the assistance providers who worked with the case study sites. Each of the five technical assistance staff members worked with at least one of the case study sites.

6.4 Data Collection

Procedures for data collection included one on-site visit, interviews with key NAPSET project participants on-site throughout the year and a half of documentation, the debriefing of assistance providers throughout the duration of the project, the collection of all documents pertinent to NAPSET assistance, and attendance at all NAPSET staff meetings. Interviews, evaluations, questionnaires, and other forms of documentation were shaped by the issues guide, the conceptual framework and the research questions developed and refined during the pilot test.

Interviews and questionnaires were the primary means of collecting data throughout the project. In addition to the on-site visits (discussed below), interviews with client site participants took place at regular intervals, beginning at the fall orientation meeting for the first year sites, and continuing

over the telephone through the midyear point of the second year, January 1986.

Our first interviews with case study participants took place in October 1984 at the Year I Orientation Meeting in Danvers, Massachusetts. Case study researchers spent one to two hours with local planning team coordinators. Using a focused interview format, we gathered information concerning district expectations, attitudes toward technology and innovation, support for special education within the district, and any significant relationships among district personnel and/or community members that might affect the outcome of the NAPSET programs. These interviews were designed to elicit information concerning the external and internal context variables defined in the conceptual framework.

The first set of interviews set the stage for the on-site visits which took place during the following December, January, and February. Each case study site was visited for two days by a case study researcher. The researchers preceded the first NAPSET liaison on-site visit by one day, so the second day was spent observing the liaison's first day on site. During these visits researchers were able to meet with the district administrators, local planning team members, computer coordinators, and special education staff both informally and formally, thereby acquiring a sense of the district, its special education program, and the use of technology prior to the NAPSET interventions. During the second day of the visits, researchers observed the NAPSET liaison as s/he established a working relationship with the local planning team, and began the process of developing a technical assistance strategy. Following these meetings, researchers debriefed the assistance providers to compare observations and establish procedures for debriefing future on-site visits when the researchers would not be present. These off-site debriefing sessions were followed up with phone calls to client site personnel to obtain several perspectives on the events that transpired.

The initial on-site visits were extremely important since all other contact by the evaluation staff with the case study sites took place either over the telephone or through interviews conducted with team coordinators at the Year II Orientation Meeting in August, 1985. During the on-site visit researchers assessed district conditions prior to intervention and established relationships with key NAPSET participants, whom they later called for updates on the project's implementation and outcomes. Interviews which focused on these issues took place during the spring of 1985, again in the fall, either by phone or at the Orientation, and in a final round during January 1986. Data collection from case study sites was terminated after the first year and a half of NAPSET interventions.

Since researchers had only intermittent direct contact with sites, other means of following the interventions and implementation processes had to be established. Clients were asked to send minutes of all LPT meetings, as well as any other

written documentation in the form of reports, newsletters, memos, etc. to the case study researchers. District profiles, client applications, and Cooperative Assistance Agreements also provided important data. In addition, liaisons were asked to keep accurate records of field visits, mail, phone, and/or telecommunication contacts with their sites and researchers had access to this documentation. Thus, liaisons provided much of the primary descriptive data about their sites. Moreover, researchers attended all staff meetings where liaisons raised issues and concerns which came up in the course of their site visits and discussed the interventions they were planning. Here, the information liaisons provided might be either descriptive or interprative in nature.

Since liaisons were the primary link between case study researchers and their sites, considerable effort was made to establish sound methods of documentation, and techniques for debriefing. Liaisons wrote detailed site contact reports after each visit to their sites, and researchers interviewed them about these visits when they returned. This yielded both descriptive and interpretive data on the sites themselves and on the interventions.

Case study researchers made every effort to record the dimensions of the assistance providers' interventions, as well as their clients' progress toward completion of their CAA. Periodically the researchers also sent around memos asking liaisons to reflect upon their technical assistance activity by describing such things as what they considered most important in providing technical assistance, the kind of relationship they established with their clients, the relative progress of their sites, etc. Here, researchers used liaisons as informants about their own role. Participant observation at staff meetings yielded more information about the liaisons' mode of providing technical assistance.

Although the most thorough data collection focused on case study sites, liaisons kept similar records of their contacts with all of their NAPSET sites. These records were used to develop smaller case study reports or "vignettes" of a number of interesting NAPSET sites not in the original sample. This information was extremely helpful in expanding the database for cross-case analysis and testing hypotheses generated by case study data. The vignettes enabled us to explore relationships between factors and conditions not represented in the case study sites.

Finally, a single round of interviews was conducted with the NAPSET local coordinators from selected Year I sites that did not continue to receive assistance beyond the first year. These interviews were designed to elicit information concerning the impact of NAPSET beyond the actual period of intervention. Since our technical assistance model was designed to facilitate long-term change, it was important to determine the final outcome of

changes initiated by the NAPSET project, the extent to which these changes had been institutionalized, and the capacity of these districts to continue to integrate technology into their special education programs in the future.

6.5 Data Processing

As with any qualitative study, we approached the task of data analysis in the NAPSET project with the knowledge that our written documentation from field notes and interviews would amount to hundreds of pages. Following the advice of Miles and Huberman (1984), and using their data analysis techniques, we began the process of sifting through and organizing our data as soon as we began to collect material.

As mentioned above (see Section 6.4), data collection procedures were focused initially by our issues guide, conceptual framework, and research questions. Rather than collecting information about every aspect of a school district, interview guides were designed to focus in on those variables we believed would influence the technical assistance process. Even so, early interviews covered a broad range of topics in order to elicit information about organizational and social context, while later interviews focused more specifically on those conditions which seemed to impact the implementation and outcomes of the NAPSET project most directly.

Data gathered during the first year of assistance was organized into descriptive interim case study reports. By following the conceptual framework outline, these reports put the data into a format through which we could begin to compare information, both within and across sites. These reports gave us some indication of the gaps in our data on particular sites, as well as which issues were reappearing across sites. To make cross-site comparisons more easily, we reduced these 20-30 page descriptions to one page charts which described site conditions, the technical assistance process, implementation and outcomes. These were the first of a series of what Miles and Huberman (1984) refer to as "displays": spatial representations which condense and present qualitative data in a systematic, ordered form. We used displays in a variety of ways throughout the analysis to summarize data, test hypotheses, and indicate when additional analysis was necessary (see Display 1, Appendix B).

Although useful in comparing what happened at each of the client sites, the summary flow charts did not illuminate causal connections. Variables appearing on the flow charts needed to be reordered and new variables considered to indicate which factors had an impact on the success or failure of the project. To do this we constructed displays detailing CAA goals, NAPSET interventions, team and school district activities, and outcomes (see Display 2, Appendix B). Ordering sites from most successful to least successful, we then constructed displays which highlighted the various site conditions affecting the process (see Display 3, Appendix B). These displays helped us devise an intermediate set of research questions, which could be answered

by analyzing the combinations of variables which seemed to facilitate or impede success. These questions grounded our original, more abstract research questions, and allowed for a more substantive analysis of the issues. We articulated them as follows:

1. What factors in the internal or external context of the client sites inhibit or promote the success of the NAPSET technical assistance model?

   a. What constitutes district readiness for change?

   b. What constitutes an effective LPT, and why?

      -- how does leadership relate to effectiveness?

      -- how do team knowledge and skills relate to team effectiveness?

      -- do teams with a "technology champion" seem more effective?

   c. Do team effectiveness and successful outcomes go hand in hand? If not, what is needed in addition for an LPT to achieve successful outcomes?

   d. Does the client site's level of use of technology in education affect outcomes?

2. How do the characteristics of a particular technical assistance strategy, i.e., goals and activities designed for an individual site, impact the success of the technical assistance process?

   a. What is the target of the liaison's activity in each district?

   b. Are these appropriate given the district's level of use of technology?

   c. Are goals and activities geared to a district's readiness for change?

3. Given that liaisons as a group approached the job of providing technical assistance similarly, did any component of their personal style or area of expertise have a significant impact on outcomes in the districts?

4. To what extent were new technology practices implemented and institutionalized by NAPSET clients?

   a. Were there changes in level of use of technology in client districts?

c. How did the intensity and duration of technical assistance affect these outcomes?

Realizing that questions concerning implementation and institutionalization (i.e., outcomes) were implicit in each of the first three questions, we shifted the focus of question four to ask:

To what extent did the intensity and duration of technical assistance impact the outcomes of the technical assistance process?

-- would a longer technical assistance period have allowed for a greater level of implementation and institutionalization?

-- could clients have benefitted from a greater level of direct contact with an assistance provider?

A similar set of questions seemed to apply to the IEU and SEA included in our case study sample, although success or failure were necessarily defined with regional goals in mind. In addition, by examining data from other IEU and SEA clients sites, we found that we needed to ask some questions about the structure of the regional organization itself, since these organizations varied so dramatically from state to state. Appropriate goals and activities at the regional level, it appeared, needed to be determined according to the particular regional structure.

Some additional data collection and processing was required to enable us to answer the four questions detailed above, and in particular to understand the impact of intensity and duration of technical assistance on outcomes. Since all case study sites with the exception of Upton received two years of NAPSET assistance, we needed to expand our data pool to answer question #4. This was the reason we conducted follow-up interviews with local coordinators from the first year sites which had received only one year of assistance. These interviews focused on ongoing implementation of technology in the district and final outcomes: permanent changes. The data were analyzed using similar techniques to those used for the case study data. The task was made easier by enlisting the assistance providers' help in identifying relevant data concerning "site conditions" on matrices designed by the evaluation/research team. In this way, data were also provided for further testing of hypotheses generated by displays of the case study materials.

As the preceding section should indicate, data processing and data analysis were inextricably intertwined in the NAPSET project. The process of condensing and ordering qualitative data is itself an analytic process. The relationships between variables revealed in one display suggest new analytic hypotheses to be examined in another display, and the process continues until the full complexity of relationships between variables

begins to become clear. Occasionally the process required more data collection to test new hypotheses; we accomplished this through targeted phone calls and/or interviews to fill out the data set.

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7.0 CROSS-CASE ANALYSIS

7.1 Introduction

As described in the Methodology section (6.0) above, the cross-case analysis was designed to evaluate the effectiveness of the NAPSET technical assistance model when implemented in a variety of local and regional contexts. In this section of the report we discuss our findings, focusing on the four questions which came to define the parameters of our research (see Section 6.5). These questions address four critical issues:

1. the impact of site condition variables on project outcomes;

2. the impact of particular technical assistance strategies, i.e., the goals and activities implemented at any given client site, on project outcomes;

3. the impact of the assistance provider's individual style, expertise, or approach on project outcomes; and

4. the impact of the intensity and duration of technical assistance on project outcomes.

As discussed above (Section 5.2), we were concerned with impact on three outcomes, representing a hierarchy of success: 1) the development and/or implementation of new practices in the area of special education; 2) the degree to which these practices were institutionalized; and 3) the degree to which districts institutionalized a process for continuing to address issues of special education technology. Those sites that accomplished only goals in category 1 were considered less successful than those that accomplished goals in categories 1 and 2, etc. Judgments made with regard to clients' success within and across categories are backed up throughout the text with extensive descriptive data from case studies and vignettes. Full case studies and vignette descriptions are included in Appendices C and D. These provide a more complete understanding of the technical assistance process as it unfolded within each client site.

7.2 Summary of Findings

As described in Section 6.0 above, case study sites were chosen to represent regional, demographic, and organizational variation, as well as the range of technical sophistication found in special education programs nationwide. In addition, all NAPSET liaisons were represented in the sample, each having been

assigned at least one case study client to determine the impact of their individual styles on the technical assistance process. In analyzing our data, however, we found that this variable was much less significant than site specific variables in determining the outcomes of the technical assistance process (see Section 7.4.3 for further discussion of this point).

Figure 2 summarizes our findings through a schematic drawing showing the relationship of site-specific variables, technical assistance strategies, and outcomes. Technical assistance strategy is broken down into two sets of variables: the goals and activities identified on a client site's Cooperative Assistance Agreement and the amount of assistance provided over a certain period of time (intensity and duration). The impact of individual liaisons is not included in the figure because we found this variable to be of little consequence in determining outcomes.

The site specific variables found to have the most impact on the outcomes of the technical assistance process were 1) the level of use of technology in the special education program, 2) the district's readiness to make change, 3) the nature of the local planning team, and 4) the quality of team leadership. Corroborating other studies of the implementation of new practices, we found that regional and demographic factors had little impact on the technical assistance process (see Louis et al., 1981).

In analyzing our data we also considered a fifth site specific variable -- organizational context. Assistance was provided to a number of IEUs and to an SEA to determine effectiveness of assistance strategies within multi-district units. We found that the four variables identified above had a similar impact on the outcomes of the technical assistance process at these sites as well. Figure 2, thus, refers to findings across single and multi-district contexts. Specific findings with regard to differences in the technical assistance process at the IEU and SEA level are discussed in Section 7.5.

The way in which the site specific variables affected the technical assistance process -- and hence the outcomes -- was more complex than we had anticipated. Three variables affected outcomes directly: readiness to make change (at very low and very high levels), the quality of team leadership, and the level of process skills and commitment evident among team members. Other site specific variables were significant in terms of their impact on the choice of goals and activities for any given site and the effectiveness of that choice in terms of the level of intensity and the duration of services offered. For example, a technical assistance strategy was most successful when it was carefully geared to the level of use of technology in the client's special education program, to the problematic aspects of

readiness where readiness was not so low as to preclude the possibility of an effective assistance plan, and to the level of LPT members' knowledge and skills in the areas of technology and planning. Similarly, adequate levels of technical assistance could only be determined in relationship to the specific site conditions encountered by the assistance providers. For example, clients at very low levels of use would have benefitted from assistance provided over a longer period of time, just as clients with poor planning team process skills might have benefitted from more intense levels of assistance.

Prior to turning to our discussion of the cross-case analysis findings, we provide a brief description of each of the case study sites and vignettes used to illustrate the rest of the report (see Appendix C for full length case studies). These descriptions are designed to provide the reader with a sense of the settings in which the NAPSET interventions took place; descriptions of the intervention process itself are integrated throughout the text.

7.3 Synopses of Case Study Sites and Vignettes

Molina Unified School District. Molina is a rapidly growing, largely suburban district in the heart of the sunbelt. With 47,000 students, the district was one of the largest participating in the NAPSET project. Three-hundred special education teachers coordinate programs for fifteen different special needs and conditions, and the district provides many support services for special students as well.

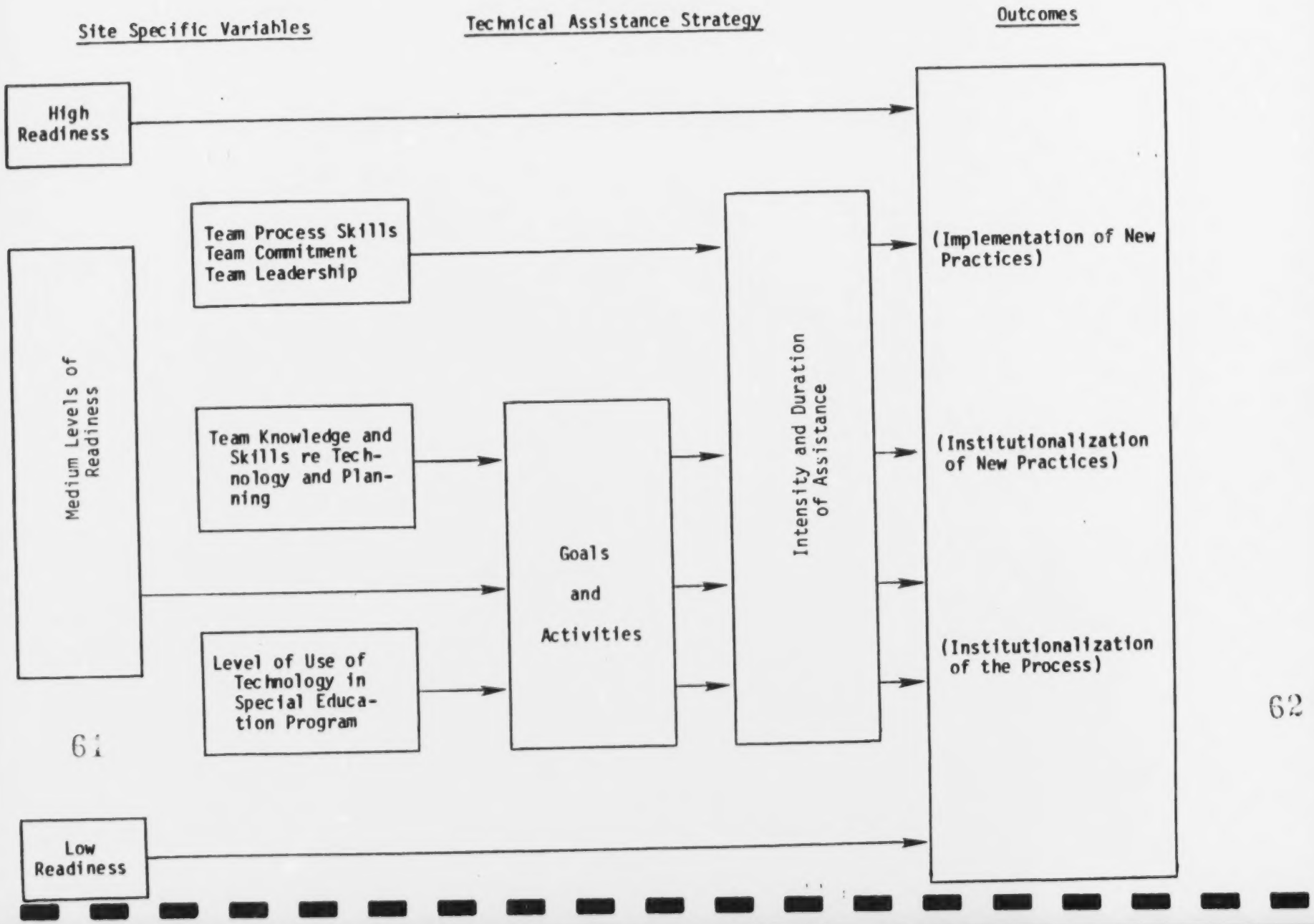
Other than purchasing three microcomputers with peripherals for its physically handicapped program, Molina had done very little to support the use of advanced technology in special education prior to their participation in the NAPSET project. Though committed to "quality education," the district administration questioned both the educational value and the financial wisdom of using advanced technology with special needs students.

The Molina planning team was composed of a diverse group of special education teachers, administrators and specialists, regular educators and parents. A special education consultant in the district special education office provided committed leadership and direction for a team with diverse interests and perspectives.

Concordia County School District. Almost as large as Molina, the Concordia school district is less administratively centralized. The district includes both the center city schools of this historic seaport, and the rural schools of the surrounding county. Special education programs are given little support by the upper level administrators who consider the program to be a financial drain on scarce district resources.

The district had begun to develop a technology program, although primarily in regular education, prior to NAPSET. A good number of microcomputers were distributed throughout the district, and a full time computer coordinator had been employed. A few special

FIGURE 2
THE IMPACT OF SITE SPECIFIC VARIABLES ON TECHNICAL ASSISTANCE STRATEGY



education administrators had also developed an interest in technology and were pursuing options such as developing a computerized IEP system.

The Concordia LPT was comprised of district disability area specialists with highly developed process and planning skills and a level of technological knowledge which exceeded that of the majority of special educators in the district. Team leadership was provided by the Director of Pupil Personnel Services, whose sense of district politics and commitment to the project contributed a great deal to the success of the team's efforts.

Upton School District. A small midwestern city in the industrial heartland, Upton is now in serious economic decline. Of the 16,000 students enrolled in the district, 80% qualify for the federally-funded school lunch program. A powerful political body, the School Board is extremely conservative and provides little support for special education.

In the year prior to the NAPSET intervention, the Upton school district made a significant investment in computer technology. However, as a result of the district computer committee's failure to take into account an increase in school enrollment in their original distribution plan, the computers were still sitting in storage. Filled beyond capacity, most of the school buildings had no space for the computer labs originally proposed and as yet no one had proposed a viable alternative.

As in Concordia, the local planning team was comprised of district disability area specialists. Although energetic and capable, they were seriously overworked and somewhat cynical about the likelihood of any real change occurring through the NAPSET effort. Moreover, the special education supervisor who had taken on the role of NAPSET team coordinator was overburdened with competing priorities and failed to address his NAPSET responsibilities adequately.

Oswego Intermediate School District. Our intermediate unit case study site, the Oswego ISD offers a variety of educational services at little or no cost to the 28 LEAs in Oswego County, a geographical area adjacent to a major northern industrial city. Funded by a county millage, a small percentage of federal funding and independent grants, the ISD has extensive resources. In recent years these resources have been funnelled into a number of technology-related programs and projects that include programs for handicapped students. The ISD now owns over $100,000 worth of adaptive/assistive devices for circulating use, employs a full-time augmentive communication specialist, and runs a state-funded project which disseminates technology information to special educators throughout the county.

Aware that local districts often dislike outside intervention, the ISD is cautious with regard to program outreach. LEAs are expected to be proactive and to make use of the services offered without much encouragement from the ISD. Consequently, a number of excellent ISD programs seem to be underutilized.

The LEAs served by the Oswego ISD range from wealthy suburban to rural and relatively poor. The four districts which participated in the NAPSET project represented this demographic diversity. Of these four, two were chosen as case study sites: Hollis, a poor, semi-rural blue collar community, and Fairleigh, a wealthy suburb.

Although a cross-district planning team was constructed at the intermediate unit level, the participating Oswego County LEAs made a decision early on in the project to divide their allotted assistance (10 days) between all four districts. Consequently Hollis and Fairleigh participated in the NAPSET project much like other local districts; however, they received less on-site assistance (a maximum of two and one half as opposed to five days).

A small community, Hollis serves 3,835 students of which 350 are identified as having special needs. Only high incidence special needs students are served in district; students with more severe handicapping conditions are sent to intermediate unit programs centered in other local districts. Hard hit by economic recession, the Hollis Schools had instituted a "no frills" curriculum eliminating all art, music, and physical education programs. Nonetheless, Hollis has a reputation for academic excellence, and an administration supportive of special education programs.

Although short on resources, Hollis had developed a fairly sophisticated computer program, particularly at the elementary level. Not wanting to be left behind, the special education director had made sure that computers were purchased for his program as well. At the start of the NAPSET project every special education classroom in Hollis had an Atari microcomputer and access to some appropriate software. Although these computers were not being used to their fullest capacity, a number of teachers had developed a sincere commitment to the use of technology with their handicapped students. These teachers, along with the elementary computer coordinator and the special education director, comprised the NAPSET team.

Fairleigh, one of the Oswego schools' wealthier districts, is a large upper middle class suburb, with approximately 10,500 students to contrast with Hollis's 3,850. The schools, rich in resources and well-supported by the community, reflect the strength of the city's financial base. Fairleigh runs six of the ISD "center" programs for students with low-incidence

handicapping conditions, and supports its own special education programs quite generously. In the area of technology use, however, much less has been accomplished in special education than in general education.
The Fairleigh LPT included special educators from the low incidence center programs and the high incidence district programs, causing a high degree of conflict over appropriate district goals and direction. The team coordinator, an in-district special education consultant, lacking support from the special education director, had difficulty asserting herself and was unable to resolve the conflicts that were hindering the planning team's progress.

"Northeast" Department of Educational and Cultural Services. The "Northeast" SEA was the only state level agency included in the NAPSET project. "Northeast" is a rural, sparsely populated state with few resources. Of the approximately 225,000 students attending school, 27,000 have special needs.

A strong ethic of local determination makes it difficult for the state department to intervene directly in the affairs of local districts. To provide for local input and a sense of local ownership three local districts were asked to join in the NAPSET effort as co-participants. All three districts had representatives of the state level NAPSET team, while one of the three, Bremen, also established a local NAPSET team. (Another case study site, Bremen will be described in more detail below.)

In 1984 the State Department conducted a survey of the use of microcomputers in special education across the state. Initial results were favorable, indicating that over 60% of the districts were at least beginning to use micros with their special needs students. This survey precipitated the State Department's decision to attempt to take on a leadership role in promoting the use of technology in local special education programs through NAPSET.

In addition to the local representatives on the state level NAPSET team, two state department officials, a computer consultant and an information specialist associated with the Division of Special Education participated. A computer enthusiast, the information specialist coordinated the effort. Although highly committed to the project, she was inexperienced and had difficulty directing the team effort.

Bremen School District. Bremen is a small, but growing rural community. Although the student population is small -- 2,600 in all -- schools are overcrowded and resources are limited. The special education program, however, is fully funded by the state, and well-supported by the district superintendent. The program serves 320 students.

Although not highly sophisticated with regard to technology, Bremen had established computer labs at the elementary, junior high, and high school levels prior to NAPSET. The choice of hardware (TRS-80's) and software, however, excluded special needs students from full participation. The special education director intended to use NAPSET to address this inequity.
A local planning team, comprised of four special education teachers and coordinated by the special education director, was established to focus on local issues. The director also participated on the state level team, acting as liaison between the state and local teams. Nonetheless the local effort proceeded almost entirely separately from the state level planning process.

The coordinator of the local planning team was highly energetic, knowledgeable about computers, and well-respected within his district. However, because other team members lacked experience in using technology, the coordinator completely dominated the local planning effort. He used his team to approve decisions already made as opposed to encouraging their participation in the decision making process.

Vignettes

Millville. The smallest and least sophisticated of all the NAPSET sites, Millville is a rural community situated in the heart of the midwest. The total school population is 226 students; the special education staff consists of one and one-half FTEs.

Although no one was as yet able to use them, the Millville school district owned two Apple IIes and a Macintosh at the start of the NAPSET project. The district intended to use these computers in the regular and special education programs for instructional as well as administrative purposes.

Millville's planning team included the district superintendent, a math teacher, the school librarian and the full-time special educator. Although the team was coordinated by the special education teacher who lacked knowledge and experience both with regard to technology and district-wide planning, the enthusiastic support of the superintendent spurred on the team's efforts.

Franklin. In terms of sheer productivity, Franklin was by far NAPSET's most successful client site. Technology implementation was a priority at the state and local level in this northwest urban center. Over 500 microcomputers had been purchased by the district and were being used at varying levels of sophistication by teachers and administrators. Nonetheless, the growth of the technology program had been haphazard and special education was still far behind.

Thirteen thousand (13,000) students attend the Franklin schools; of these 2000 receive special education services. The special education director was an enthusiastic technology supporter, and put significant time and energy into coordinating the NAPSET project. Moreover, team members were highly committed and, in general, fairly sophisticated technology users. This allowed the team to implement changes more quickly than other districts since they did not need to spend a great deal of time educating themselves about technology.

Oxford. A medium-sized east coast suburb, Oxford has a student population of 4,000. The special education department serves 240 students and is well-supported by the district.

Oxford was one of the more technologically sophisticated NAPSET sites. Each of the school buildings had at least one computer lab, the high school had developed a four year computer curriculum, and 85% of the district staff had completed at least one computer training course. Moreover, the special education program had been provided with one microcomputer per building in addition to access to equipment purchased for regular education.

The Oxford team differed from most other NAPSET teams in that no administrators actively participated. The team was coordinated by a young special education teacher who was highly committed to the project but had little experience in planning for change. Given support by both the special education director and the team's NAPSET liaison, however, she became a skillful and articulate team leader.

Northboro. Approximately the same size district as Oxford, Northboro is also a northeastern suburb. Five hundred students, a considerably higher percentage than in Oxford, are served by the special education program.

At the outset of the NAPSET project Northboro was in Phase 1 of a three year computer plan. Computer committees had been established at the high school, junior high, and elementary levels and 21 Apple IIes had been purchased for a high school computer lab. The computer plan, however, did not address the needs of special education.

Although the district computer coordinator intended to direct the NAPSET effort, he left the district just prior to the initiation of the project. Consequently the special education director, who was much less committed to the implementation of technology, became the team coordinator. Her lack of enthusiasm seemed to affect the commitment of all the team members; thus attendance at meetings, workshops, and training sessions was sporadic at best.

Redcliff/Jaspar. Neighboring but separate districts in the western part of the country, Redcliff and Jaspar applied to the

NAPSET project as a single client site. Although they developed a single CAA, differences in district conditions, organization, politics, etc. led them to establish two separate planning teams.

The larger of the two districts, Redcliff, is a semi-rural community with a school population of 3,400 students. Four hundred (400) students are served by the special education program. Redcliff had already established a fairly sophisticated regular education computer program, and was working on the implementation of computers in special education as well. Workshops and inservice training for special educators had been provided, and many teachers were using drill and practice software in their classrooms.

The NAPSET effort in Redcliff was directed by a program specialist who had been given responsibility for developing the special education technology program two years earlier. Although highly committed to the NAPSET project herself, she was unable to garner much enthusiasm among other team members. The situation was exacerbated by a lack of clear support from higher level district administrators.

Jaspar is a very small, K-8 district with only 380 students. Special education students had access to the district computer center with its 16 micros, as well as two Apple II+ computers purchased exclusively for the special education program. Because the district is so small a separate NAPSET team was never established. The five special education teachers and the program coordinator used their weekly staff meetings as a forum through which to address technology issues. NAPSET simply became part of the weekly agenda. This was a highly effective means of incorporating technology planning into the on-going activities of the special education department.

Manchester County Intermediate Unit. The Manchester County Intermediate Unit serves the needs of 21 rural and suburban school districts located outside an eastern urban center. In the area of special education, the IU provides coordinating and consultative services to its member school districts as well as providing direct service special education programs for low incidence and severely handicapped populations. Unlike the Oswego ISD, the Manchester IU has good working relationships with all of its constituent districts and its services are used effectively throughout the area. Five LEAs associated with the IU participated in the NAPSET project.

NAPSET was the second special education technology project undertaken by the IU. At the start of NAPSET, Manchester was in the third year of a field test study exploring technology applications in special education. Thirty special educators at the intermediate unit were involved in the project.

The five LEAs participating in NAPSET were at varying levels of sophistication, but all had reached at least a preparation level of use. The special education directors from each district sat on the IU planning team along with three IU employees (including technology specialists.)

These directors also met together regularly with the rest of the special education directors in the county. The system of communication and initial support between IU member districts was such that the LEAs participating in the NAPSET project were able to establish reliable local planning teams with no more direct NAPSET support than what the local coordinators received at the IU planning team meetings. The well-established and well run IU infrastructure facilitated this highly successful effort at regional assistance provision.

7.4 Cross-case Findings

In the following sections we present the cross-case findings by addressing each of our four primary research questions in turn.

7.4.1 How did site-specific conditions affect the outcomes of the NAPSET technical assistance process?

As discussed above (Section 7.1), our analysis of the case study data indicated that there were five significant site-specific variables which affected the success of the process. We defined these variables as follows:

1) The District's Readiness to Make Change. Three factors appeared to be critical with regard to "readiness":

   -- the degree of administrative support for the change effort;

   -- the amount of staff time available to work on the project; and

   -- access to monetary resources within the district.

2) The Nature of the Local Planning Team. Local planning teams were quite diverse and could be described in terms of a number of different characteristics. We found it most useful to analyze team composition, not in terms of individual roles, ages, or social position, but rather, in terms of:

-- the team's level of knowledge and skill re technology;

-- the team's level of interest and/or skill re planning for change;

-- team process skills; and

-- the level of team commitment to the process of technology implementation.

3) Quality of Team Leadership. Leadership was defined in terms of an individual's ability to coordinate a team effort, as opposed to their ability to implement the NAPSET project alone.

4) The Level of Use of Technology in the Special Education Program prior to the NAPSET Intervention. Described in more detail below (Section 7.4.2), level of use refers to the degree to which microcomputers were integrated into instructional and administrative practices within the special education programs and the degree to which teachers and administrators were comfortable with their use.

5) The Organizational Context. Each of the three types of educational organizations included in the NAPSET project -- LEAs, IEUs, SEAs -- provided a different context with different types of assistance needs. Thus we analyzed the success of NAPSET technical assistance separately in each of these types of organizations. We found, however, that most factors affecting outcomes in one context had the same or similar effect in the others. Because most of our client sites were individual LEAs, we have conducted our cross-case analysis using LEAs as our unit of comparison. We occasionally refer to the multi-district sites in our cross-case discussion, since we found that organizational context had no particular bearing on many of the factors considered therein. [For simplicity's sake we have clustered our analyses of the differences of providing technical assistance to multi-district sites in Section 7.5.]

In analyzing site-specific variables we found that the level of district readiness, team process skills and commitment, and team leadership all had a direct impact on the outcomes of the technical assistance process regardless of the exact configuration of the intervention. Unlike the RDU Study (Louis et al., 1981) our findings suggest that these variables were stronger than the dimensions of the intervention in determining final outcomes. Other site-specific conditions did not affect

outcomes directly; these included the level of use of technology in special education, the organizational context, and the level of knowledge and skills re planning and technology exhibited by local team members. Instead, these variables had indirect impact. They were critical in determining appropriate goals and activities, and the level of technical assistance necessary for a client site to achieve those goals, which in turn affected final outcomes. Our discussion of the impact of this set of variables on the technical assistance process appears under Sections 7.4.2, 7.4.4, and 7.5 below.

A discussion of those site-specific variables which had a direct impact on project outcomes follows.

Variable #1: Readiness to Make Change

Although the RDU Study found that "readiness" variables were not terribly significant in terms of their impact on the success of the RDU projects, other school improvement studies have indicated that readiness may be critical to successful implementation of innovations (Berman and McLaughlin, 1975; Huberman & Miles, 1982). This has been a problem for assistance providers since it is often the least "ready" schools which are the most in need of technical assistance (see Louis et al., 1984). Nonetheless, just as in other studies, we found that NAPSET clients characterized by very low readiness were unable to take advantage of the services offered and made very little progress toward implementing new technology-related practices.

Probably the two least successful NAPSET clients during the first year of service provision were Upton and Northboro. Both sites were characterized by very low readiness to make change. An enthusiastic special education director in Upton seemed to bode well for the success of the NAPSET project. However, lack of support for the project from upper level administrators, as well as the Board of Education, meant that the seriously under-funded special education department had little room for independent improvement. Inadequate staffing within the department left the special education director with little time to coordinate the NAPSET planning team effort, and lack of funds seemed insurmountable in a department which felt pessimistic even with regard to their ability to gain access to hardware recently acquired for general education. Lacking in all three readiness measures -- administrative support, staff time and monetary resources -- little enthusiasm could be generated among local team members, and the NAPSET effort never really got off the ground.

With slightly better monetary resources, Northboro also suffered from a lack of district commitment. The person who had originally applied to participate in the NAPSET project left the district prior to the project's beginning, and no one else stepped forward to fill the leadership vacuum. Since the special education director had little interest in the project, team members felt uncomfortable taking release time to attend planning team meetings. Meetings were generally ineffective as members either did not show up, arrived late, or left early. The assistance provider found it difficult to do more than provide some very specific advice concerning the use of adaptive devices with particular students in this district. The team simply could not sustain any more involved activities; thus the long term impact of the project is likely to be insignificant.

Just as sites at very low readiness levels had difficulty following through with their NAPSET commitments, client sites characterized by very high readiness seemed capable of doing

almost anything. Regardless of the initial level of use of technology in the district's special education program, high readiness districts succeeded in implementing important changes in practices, and in developing new processes for implementing changes in the future. In a Georgia site, for example, a few teachers and administrators were just beginning to explore technology applications when the district applied for participation in the NAPSET project. There was, however, a high level support for NAPSET, and a solid resource base. By the end of their first year of assistance, a number of district teachers had acquired the necessary hardware and software to begin using microcomputers with their students. Through workshops that focused on developing staff awareness, and training in particular pieces of software, teachers became genuinely excited about a new mode of instruction.

Franklin represents a more sophisticated district with a very high "readiness" quotient. In many ways the most successful NAPSET site, Franklin accomplished much more than it set out to. In one year the team planned and conducted 35 teacher workshops, established a number of active "user" groups, produced a NAPSET newsletter which is now being distributed to all NAPSET sites as well as other districts around the country, and acquired funds to build a "super-computer" designed to demonstrate adaptive/ assistive devices throughout the district. The Franklin district had good monetary resources and an interest in investing in computer technology. The special education coordinator (who was a member of the NAPSET team) fostered this interest by keeping upper level administrators informed of the LPT's activities and other team members spent far more than their allotted release time on project activities. All the conditions were right for significant change.

In most high readiness districts, local planning teams seem to be firmly established after one year, and are likely to continue to address issues of special education technology in the future. A high level of readiness enabled a team to move forward at a rapid pace, and with a degree of flexibility not possible in low readiness districts which seemed capable of accomplishing only very limited goals. Their rapid progress meant they were far more likely to reach the point of being able to institutionalize either the innovation itself or the change-making process.

Other factors, of course, contributed to the success of high readiness districts -- good local planning teams with effective leadership, and appropriate goals and activities -- but it was the availability of adequate resources and strong district support which underlay the ability of these teams to institutionalize their efforts as well as to accomplish specific CAA goals. NAPSET's lack of success in low readiness districts suggests that it may be necessary to focus change efforts on more fundamental needs in these districts -- for example, more general

resource development efforts and/or the development of a district-wide commitment to special education -- prior to initiating a change effort in an area like technology, which requires the commitment of extensive resources, not just for the purchase of equipment, but more importantly for ongoing staff development and training. One solution may be a longer assistance period, with the first year of assistance focused on raising the level of readiness, and the second year on implementation of new practices. We discuss these issues in more detail in Section 7.4.4.

Readiness to make change is a complex variable, and more school districts fall in some middle range than on the low or high ends of the continuum. Often we found districts had adequate resources but lacked district commitment, or visa verce. In some cases, although the district leadership was not antagonistic to the project, there was clearly no active support coming from upper level administrators. In these sites, the choice of a technical assistance strategy became much more critical to the success of the project. Success was dependent on choosing goals and activities which could either generate increased commitment to the project, or provide for external funding. We return to these issues in addressing question 2 below (see Section 7.4.2).

Variable #2: Nature of the Team: Process Skills and Commitment

NAPSET clients were required to establish local planning teams to carry out district goals in order to participate in the project. Orientation meetings with clients included sessions which described the purpose of a planning team, how to select appropriate team members, how to facilitate planning team meetings, etc. A great deal of emphasis was placed on selecting team members who would represent a broad range of constituencies; for example, administrators as well as teachers, representatives of special education as well as regular education, parents, computer users and non-users, district computer coordinators, etc. However, we found that diversity itself did not necessarily make for a good team. Overly diverse teams tended to have difficulty coming to agreement on priority need areas and district goals. Moreover, team members who did not have a stake in team activities dropped out or were inactive. This was often true of regular education representatives, and at times parents, who were primarily concerned with their own child's needs. We found that the most effective NAPSET planning teams were selected by team coordinators who had some prior sense of district needs, and chose team members who would have an interest in engaging in activities addressing these need areas.

We also found that the most effective LPTs included either the special education director, or someone directly connected to the director who could keep him or her up to date on the team's activities. Teachers and low level supervisors usually had

little understanding of the intricacies of district budgets and politics; thus, it was usually the special education director who made connections with the upper level administrators controlling the district purse strings, thereby ensuring the funding of the LPT's projects.

One of the initial criteria for choosing case study sites was variation in district size. For the most part, we found that size had little impact on the technical assistance process; however, it was important in selecting an appropriate team. In large districts, middle level administrators (most often supervisors of the district's various special education programs) were much more effective team members than classroom teachers. Classroom teachers tended to have very narrowly focused concerns, and little sense of larger district needs. It was, however, essential for these "administrative" teams to stay in touch with teacher needs through direct communication, as well as formal needs assessment activities.

Smaller districts functioned quite well with predominantly "teacher" teams. More familiar with the district as a whole, these teachers had less difficulty moving from their own personal concerns to a district- focused effort. Moreover, the homogeneity of these teams (often comprised of the SPED director and four or five special education teachers), seemed to facilitate the process, making it easier for these teams to establish clear goals and reach consensus on appropriate activities.

More important to the success of the NAPSET project than the individual "roles" team members played within the school district or the constituencies they represented, were the level of commitment and the various combinations of skills team members brought to the project. In analyzing team composition variables, we determined that three types of skills were significant with respect to the technical assistance process: the level of technical knowledge and skill among team members; the level of interest and skill demonstrated with respect to planning; and team process skills. Appropriate technical assistance strategies depended on determining the level of technical, as well as planning skills represented among team members; thus, these skills are discussed in Section 7.4.2 below. Since the ultimate effectiveness of the team and, therefore, the success of the NAPSET project, was highly dependent on the level of team process skills and commitment, these team characteristics are addressed here.

Team Process Skills. Although the NAPSET technical assistance model was process-oriented, assistance providers did not focus their efforts on building team skills. Some teams, particularly those with good leadership, developed these skills over time. Since the assistance provider did not focus on the development of

skills in this area, it was essential for the team coordinator to have some understanding of the meaning of "good process," and some skill at facilitating a team effort.

Process skills fall into two general categories. First, there are the concrete skills involved in running a meeting and coordinating a group effort; these include setting meeting times and making sure people are notified, circulating agendas, facilitating meetings, keeping records (including minutes), dividing tasks and creating timelines. A second set of skills, less concrete in nature, involves the ability of team members to work together. Often team members are more interested in exercising their own power, or in promoting their own agendas, than in working cooperatively to address the needs of a large number of people. It takes savvy leadership to facilitate a team effort when members are overly committed to their own agendas.

Leadership is discussed in greater depth below. Here we illustrate that poor team skills often seriously impeded the technical assistance process. Two sites, the "Northeast" SEA and Fairleigh, from the Oswego I.U., provide classic examples. Both teams were comprised of members who were highly committed to their own agendas, and refused to compromise to facilitate the group effort. Both teams eventually relieved some of the tension between team members by splitting into two groups focused on different issues. This helped to move beyond direct conflict; however, even within these smaller groups, efforts fell far short of their potential because team members lacked the basic process skills discussed above.

Previous experience with a team effort, or group process, gave some NAPSET teams a distinct advantage with regard to their potential for success. Regardless of the district's technological sophistication, team members with a history of working together were much more capable of focusing their efforts, establishing goals and objectives, and determining an appropriate plan of action. Two excellent examples are the Concordia team and the Jaspar team. Concordia is a large district; thus, the team was composed of district special education supervisors, mid-level administrators who work together to plan and coordinate the special education program. These LPT members knew each other well, were familiar with one another's working styles, and had already developed the skills necessary to carry out a team effort. The same was true for the Jaspar team. Since Jaspar is a much smaller district, NAPSET simply became part of the special education department agenda. The NAPSET team was composed of the entire special education staff, which met weekly to consider all program issues, including NAPSET. There was no need to develop a new process.

Some NAPSET teams developed excellent team skills over the course of the project year. Several factors appeared to facilitate this

process -- strong leadership, clear commitment to the project, and an initial focus on concrete, technology-related tasks as opposed to long range planning activities. For teams which lacked any sense of initial group identity, concrete tasks seemed to provide both an immediate sense of success, and a context through which team members could learn something about each other's interests, styles and abilities. With good leadership, this knowledge, and the trust that seemed to develop between members who had successfully accomplished something together, could be translated into an effective group process. We saw this process at work in several districts, including Molina and Oxford. Although lacking any previous experience with group projects, these teams developed excellent process skills, and a real commitment to the team effort. In both districts, team members stuck with the project over the entire two year period, moving from their initial, somewhat circumscribed, concrete tasks, (a CAI pilot test, and a software evaluation process respectively) to more long term, integrative planning efforts.

Moreover, on both teams teachers expressed tremendous satisfaction with the project's contribution to their own personal and professional development. This indicates that a successful team experience focused on a change effort can contribute to a sense of individual empowerment and effectiveness in school districts where teachers may feel disempowered by hierarchical structures, as well as a general lack of new and interesting experiences. Our findings corroborated those of the RDU study, indicating growth in leadership skills, self confidence, and job satisfaction were often as important to teachers as the successful implementation of new practices (Louis and Rosenblum, 1981). Although NAPSET team participants always expressed satisfaction with their learnings in the area of technology, on the most successful teams the chance to work on a group effort with colleagues seemed to provide the greatest satisfaction.

Level of Commitment. The importance of district commitment to the NAPSET project was addressed above in our discussion of "district readiness to make change." Here we refer to the level of commitment of LPT members. Were members "drafted" by their supervisor, or did they choose to participate in the project because of a genuine interest in special education technology? We found three types of planning teams: (1) those whose members were completely committed to the implementation of advanced technology in special education, regardless of the means of getting there (be it the NAPSET project or some other means); (2) those whose members needed their commitment to be nourished over time (with success constituting the greatest nourishment); and (3) those whose members simply had no interest, and considered the project an added burden in an already too busy schedule.

The Franklin team was the classic example of type 1 -- total commitment. The team coordinator, as well as a number of other team members, was completely committed to the effective use of advanced technology for both the instructional and administrative needs of the special education department. If NAPSET had not come along at the appropriate moment, the coordinator would no doubt have found some other means of moving ahead with this project. The complete commitment of team members came through at every step along the way, both in terms of the amount of work the team accomplished, and in terms of the quality of their efforts.

On the other end of the scale, we have the example of Northboro. As noted above, leadership was lacking on the Northboro team. Other team members appeared to have little awareness of, or interest in advanced technology. Liaisons had little success in districts such as this. Without even a seed of interest to nourish, there was little chance of developing a sense of excitement and interest with regard to the project.

More common than either the Franklin or the Northboro scenario were those teams who had some level of interest in the project, but who needed their commitment to be nourished over time. These teams moved forward on the waves of success, but were easily frustrated by unforseen difficulties. If results were not forthcoming, team members lost interest and simply stopped participating. A western Massachusetts site stands out in this regard. Team members had a keen interest in the project, but lack of support from the administration was so frustrating that some of the more enthusiastic Year 1 participants refused to participate during Year 2. A more successful example is Oxford, discussed above. Through their success, and the development of good team skills, team members in this district gained a real sense of "ownership" of the NAPSET effort, and thus, a commitment to making the project a success.

Variable #3: Quality of Team Leadership

In their executive summary of the Dissemination Study (1983), Crandall and Loucks claim, "forceful leadership is the factor that contributes most directly and surely to major, effective changes in classroom practice that become firmly incorporated into everyday routines" (p. 10). Leadership was also critical in determining the success of NAPSET's local planning team efforts.

Local planning teams were often composed of disparate groups of teachers, administrators and specialists who had little experience working together. The team coordinator frequently had to develop team members' process skills and commitment to the project. Effective leaders built team cohesiveness through good facilitation, through their ability to concretize tasks and distribute them among team members, and by providing a sense of vision or possibility with regard to the use of advanced

technology in special education. In addition, providing effective leadership required that a team coordinator maintain contact with their district's NAPSET liaison, and work to develop allies among the district's upper level administrators. These tasks were often complex, and time consuming; only those team coordinators who were fully committed to the NAPSET project and knew of their importance performed them effectively.

During the first year of NAPSET's provision of technical assistance, local planning teams were required to appoint co-coordinators for their change effort. It was hoped that an administrator and a teacher would work together to coordinate the project, thus providing two somewhat divergent perspectives on the district's conditions and needs. However, we found that most often the administrator, usually the special education director, took over the primary leadership responsibilities. In addition to being consumed with day-to-day teaching responsibilities, teachers often did not possess a sophisticated enough understanding or a broad enough vision of district conditions, policies, and politics to take on this kind of leadership role. In cases where a teacher was designated as the primary project coordinator and became an effective leader, he or she had the unconditional support of the special education director and an open line of communication to the director's office. Where it was necessary to become involved in the nitty-gritty of district politics, the director inevitably took over.

Two contrasting cases, Oxford and Fairleigh, illustrate some of the issues involved in having teachers take on the primary leadership role for a team-focused, change effort. In Oxford, the teacher responsible for the NAPSET project became a highly effective leader, working closely with the NAPSET assistance provider and winning the support of colleagues both on and off the NAPSET team. From the beginning, the special education director provided support and encouragement, although her own busy schedule precluded her from taking on major task-oriented responsibilities. Nonetheless, the director did act as a link to other district administrators when it appeared that the local planning team was having difficulty acquiring hardware and software promised by the Board of Education.

In Fairleigh, the team coordinator designated by the special education director was a district special education consultant. Although not currently a classroom teacher, she had had little experience participating in district-wide change efforts. Her position was more that of an adjunct teacher than that of an administrator. She lacked authority among her colleagues, as well as any mandate from the special education director, who was busy with his duties as acting superintendent. Consequently, she was never able to become an effective leader. The disparate and conflicting interests of team members were never resolved, and

the team managed to accomplish very little over the course of their participation in the NAPSET project.

The most effective leaders involved in the NAPSET project were those who were not only committed to the implementation of technology in special education, but who were committed to the team process as well. Where coordinators took over the project completely, leaving the team to simply approve decisions already made, the long range impact of the project remains questionable. Bremen provides an excellent example.

Lacking what they considered the requisite knowledge and skills to participate in a district planning effort, Bremen's team members made few suggestions in the development and implementation of their CAA. Moreover, the team coordinator's goals did not include raising the level of technical knowledge among team members to develop a knowledgeable cadre ready to embark on the implementation of new technology. He was much more concerned with moving quickly, and implementing new instructional methods immediately. Consequently, he wrote a district plan on his own, which failed to address the primary concern of the planning team members, that of adequate staff training. Such a plan could hardly receive the wholehearted support of the team, nor did it insure the most appropriate use of the hardware and software the district purchased. While he managed to secure funds to purchase several microcomputer systems, the team coordinator failed to build any sense of commitment to the NAPSET project, or even to advanced technology in special education in general.

Molina also provides an excellent example of the critical nature of effective leadership. Molina is a large school district, and the team represented the diverse interests of a broad spectrum of special educators. Since the team lacked a clear focus which represented everyone's interests, good leadership was essential to keeping the team on track, resolving differences among members, and making sure that everyone on the team was heard.

Following the NAPSET liaison's first visit to Molina, the team coordinator left the district on a 2 1/2 month medical leave. In her absence, the planning team floundered; unclear of their purpose and direction, they failed to meet according to their pre-arranged schedule. Moreover, individuals had become progressively disillusioned with the goal of writing a long-range plan for technology use in the district. They felt that the plan would never gain School Board approval, but they had little idea of how to proceed in a new direction. It was only when the coordinator returned that the team was able to redirect its efforts, and grow into a cohesive working body. Through a group process exercise, the local coordinator assisted the team in identifying a more appropriate goal, and designing a coherent, concrete set of activities through which the team could meet its

objectives. In the following months, Molina's LPT successfully developed plans for a pilot project, which received Board approval in the spring, and was implemented during the following fall.

All of the most successful NAPSET client sites had strong, creative and responsible team leaders, concerned with making the NAPSET project a team effort, and capable of accessing district resources (or persons with access to those resources). Although strong leadership could not always overcome other negative factors, lack of high quality team leadership spelled disaster. Individuals do make a difference, especially in leadership positions. The outstanding efforts of team coordinators in Franklin, Jaspar, and Oxford all indicate the level of accomplishment a district can achieve even with fairly low intensity technical assistance (five days in the course of a year). Although each of these sites began at different levels of use, all moved forward dramatically in at least one area -- Oxford in software management, Franklin in instructional practice, and Jaspar in long range planning. Moreover, none of these team leaders were technology experts; they simply had a sincere interest in developing the capacity of their staff to use technology effectively, and the skills necessary to direct a group planning effort.

Summary of Findings

- Three variables had a direct impact on implementation outcomes:
  - -- level of district readiness to make change;
  - -- team process skills and commitment to the project;
  - -- team leadership.
- Low readiness sites were least able to take advantage of the technical assistance, while high readiness sites were almost invariably successful; different variables were critical in determining project outcomes when readiness fell in between these two extremes.
- Because assistance did not focus on process skills, teams with poor skills were at a distinct disadvantage -- too much energy was spent resolving conflicts and little real progress was made in implementing new technology.
- Teams with initially poor process skills were sometimes able to develop better skills through the commitment of an effective leader, and early

attempts to accomplish concrete, circumscribed goals. This strategy allowed team members to learn how to work together, develop a certain level of group knowledge, and experience success.

- Effective team leadership was essential to the success of the project. Good leaders demonstrated a commitment to both the approach and the goals of the NAPSET project.

- Good team leaders were good facilitators and managers, not necessarily technology experts. It was important that they provide a sense of vision for the team, however, and that they maintain contact with upper level district administrators and their district NAPSET liaison.

- Individual team members expressed a high degree of satisfaction in having had the opportunity to work on a group planning effort with colleagues, and in having developed skills in this area.

7.4.2 How did the choice of goals and activities at a particular client site -- i.e., the technical assistance strategy -- affect the outcomes of the technical assistance provided?

As described in Section 5.1 above, the NAPSET technical assistance model was designed to provide services tailored to the individual needs of client sites. Clients could choose from a broad range of possible goals ranging from increasing technology awareness among staff and administrators, to software evaluation training, the implementation of computerized IEP systems, or the development of long range technology implementation plans. In analyzing these goals, we found that what seemed at first to be an infinite range of possible goals actually fell into five fairly discrete categories:

(1) Training

  (a) the development of LPT members' knowledge and skills with regard to technology, and/or planning for change;

  (b) the development of district-wide knowledge and skills with regard to technology and/or planning for change;

(2) Implementation of new practices

  (a) implementation of new instructional applications, e.g., moving from CAI to the use of word processing, LOGO, spreadsheets, or databases;

(b) implementation of new administrative applications, e.g., student recordkeeping systems, or IEP systems;

(3) Development of management systems; e.g., software acquisition and distribution systems, tracking systems for adaptive devices, etc.;

(4) Development of long range integrative plans; e.g., working with existing and projected resources to come up with a plan for technology use in all areas of the SPED program; and

(5) Development of fundraising strategies; e.g., identifying prospective funding sources, training in grant writing, critique of proposals, etc.

These descriptive categories provided an heuristic device through which it was possible to analyze the relationship between project outcomes and the choice of particular goals and activities. In analyzing outcomes, we found that the goals and activities chosen by individual client sites did not, in and of themselves, affect a client's success; that is, sites that chose to implement computerized IEP systems were not necessarily any more successful than sites that chose to focus their efforts on developing staff awareness. However, we did find that the choice of particular goals and activities was critical when analyzed in terms of their relationship to particular site conditions.

Thus the appropriateness of the chosen goals and activities was critical to a client's success. Client sites were most successful when their CAA goals seemed to take into consideration a certain set of conditions: the district/region's level of use of technology in its special education program; any significant gaps in the district/region's readiness to make change, for example, a lack of resources; and the LPT's level of knowledge and skills in the areas of planning and technology. How each of these site-specific variables affected the choice of an appropriate technical assistance strategy is discussed below.

Variable #1: Level of Use of Technology in Special Education

By far the most significant variable with respect to a district's choice of goals and activities, level of use refers to the degree to which technology use was already integrated into the daily instructional and administrative practices of a district's special education department. From the outset the NAPSET evaluation team was concerned with the impact of a district's "technological sophistication" on the technical assistance process. Case study sites were chosen to represent the full

range of variation, from nonusers with little available hardware or software to routine users in resource-rich environments.

As we began to process and analyze our data, however, we found that to make accurate cross-case comparisons we needed some means of measuring a district's "technological sophistication." Adapting the "level of use" concept, developed by the University of Texas, Research and Development Center for Teacher Education (Hall & Loucks, 1977) as part of the Concerns-Based Adoption Model, we were able to operationalize what had seemed to us to be a "fuzzy" variable.

The level of use concept, as originally developed, refers to the way in which an innovation (any new concept, program, piece of equipment, etc.) is used by an individual in a system. One advances through various levels of use, beginning with nonuse and moving up a scale of increasing sophistication and complexity through orientation, preparation, integration, and renewal stages (see Figure 3).

These levels are significant because an individual has different knowledge and very different concerns about the innovation depending on his or her level of use. We felt that if we could estimate a "median" district level of use of technology in special education, we could then evaluate whether the goals outlined in the CAA were appropriate for that level of knowledge and skill, as well as whether the concerns of district personnel were addressed by the NAPSET assistance. Our characterization of district level of use generally referred to the use of microcomputers in instruction and administration, as this was the most prevalent form of technology in use across all the NAPSET client sites (as well as the area in which most sites requested assistance).

Using the Level of Use Behavioral Index, we found that our case study sites were generally at a much lower level of use than we might have expected from perusing the original applications and district profiles. Even those sites actually using microcomputers for classroom instruction had not moved beyond a mechanical stage. Looking beyond the case study sample, across the population as a whole, we found this was true of most of the sites involved in the project. With the exception of two highly sophisticated sites involved in "refinement" and "integration" activities, few sites had even reached a level of technology use we might characterize as "routine."

In analyzing the impact of level of use of technology in special education on the NAPSET technical assistance process, we found that success of assistance was strongly influenced by the compatibility of goals and activities written into the district's CAA with the district's median level of use. Districts achieved the highest rate of success when they set goals which addressed

existing staff concerns and prepared them to move into the next stage on the level of use index, regardless of the level of use they happened to be at initially. To illustrate the way in which the success of particular technical assistance strategies depended on a district's level of use, we describe appropriate and inappropriate goals and activities at each of three stages: nonuse/orientation, preparation/ mechanical, and routine/refinement/ integration.

Nonuse/Orientation. Nonuse characterized the level of use of technology for the majority of special educators at a number of the case study sites. These included Concordia, Molina, Millville, and Bremen. Team members, having sought out information about technology as part of the NAPSET project, were usually at a slightly higher level of use than their district colleagues. In a few cases, for example Concordia, team members were considerably more sophisticated than their colleagues, having pursued individual interests in the area of technology prior to NAPSET's arrival in the district. We discuss the team's level of use in more detail below (see Team's Level of Knowledge and Skill re Technology).

Figure 3

LEVELS OF USE OF THE INNOVATION[1]

Typical Behaviors

LEVELS OF USE		BEHAVIORAL INDICES OF LEVEL
VI.	RENEWAL	The user is seeking more effective alternatives to the established use of the innovation.
V.	INTEGRATION	The user is making deliberate efforts to coordinate with others in using the innovation.
IVB.	REFINEMENT	The user is making changes to increase outcomes.
IVA.	ROUTINE	The user is making few or no changes and has an established pattern of use.
III.	MECHANICAL USE	The user is using the innovation in a poorly coordinated manner and is making user-oriented changes.
II.	PREPARATION	The user is preparing to use the innovation.
I.	ORIENTATION	The user is seeking out information about the innovation.
O.	NONUSE	No action is being taken with respect to the innovation.

[1] From Hall and Loucks (1977).

In districts where the majority of special educators were non-users or were just beginning to enter the orientation stage, we found that the most appropriate district goals focused on building district knowledge, interest and enthusiasm for technology. NAPSET clients designed a number of different activities to achieve this goal. Many of these involved either some form of staff training, or a clearly defined, discrete project which could be implemented in a relatively short period of time. Successful activities in Millville and Concordia illustrate the effectiveness of technical assistance strategies that are compatible with a district's level of use.

Millville was our smallest, most provincial NAPSET site, but certainly not the least capable. Having already purchased three Apple microcomputers, the LPT's first goal was to educate itself about everything their Apples could do for them. Out of this activity developed the decision to subscribe to a telecommunications network, thereby taking greater advantage of the equipment they already owned. Their third goal was to present a technology training day to their entire staff, to introduce them to the Apples' capabilities, spark their interest in the technology, and increase instructional use of the available equipment. Each activity, because it addressed the district's issues at the appropriate level, was perceived as highly successful.

In Concordia, the local planning team members were at a preparation or mechanical level of use, but most of their special education colleagues were non-users. Moreover, there was very little district support for special education: the program was generally considered a financial drain on scarce district resources. The local planning team, realizing it had to both raise the level of knowledge and the demand for technology by the special education staff, sponsored a day-long technology "mini-fair" for their department. The mini-fair was so successful that it led to the development of a two-week summer workshop on special education technology and an expanded mini-fair the following fall. This series of training events significantly raised the level of interest in technology among special educators. Local planning team members hoped that the increasing demand for microcomputers in the special education program would put pressure on the administration and Board of Education to provide greater access to technology for special needs students as well.

Molina provides example of a site at a very low level of use that chose inappropriate NAPSET goals. The local planning team set out to write a long range district-wide plan for the use of technology in special education; however, it had neither the requisite knowledge, nor the technical experience to write a truly appropriate and meaningful comprehensive plan. Recognizing

that their original strategy was inappropriate, the team rewrote their CAA halfway through the year, dropping the written plan and replacing it with a plan for a pilot test.

Molina's second strategy -- the pilot test -- proved to be much more effective than uninformed long range planning. Focusing on the use of word processing with learning disabled students, the pilot test provided a controlled context in which to demonstrate the efficacy of technology use. Through their efforts the local planning team was able to successfully generate interest in the use of technology with special needs students among teachers and administrators, as well as the Board of Education. Moreover, through the research and planning necessary for the pilot test, the team developed their own knowledge and skills, thus preparing them for a more extensive planning effort in the future. Development of the pilot test was the vehicle for moving the Molina team from non-use into an orientation and eventually preparation level of technology use in special education.

The well-thought-out implementation of one appropriate new technology practice was often the first concrete step beyond initial training for nonuse/orientation sites. Millville's implementation of telecommunications is one example of this; Molina's pilot test is another. Taken in the context of an overall evaluation of the district's level of use, readiness to make change, and team energy and skill, this implementation of a new practice can be very exhilarating and spur the local planning team on to greater accomplishments in the future. New practices often raised the overall level of use of technology in the district simply by pushing individuals to overcome their fear of the technology. Once the technology was in use, there was often a greater interest in exploring new applications.

Preparation/Mechanical Use. As described above, writing long range plans for the use of technology in special education programs was difficult for districts at very low levels of use. Teams in districts characterized by higher levels of use were much more successful with this goal. Jaspar, for example, had reached the preparation stage when the district joined the NAPSET project. Meeting weekly, the Jaspar LPT developed a long range technology plan that focused on four areas: curriculum integration; administrative uses; software management; and teacher inservice training in the use of instructional, as well as administrative software. Although they were not sophisticated technology users, the special education staff in Jaspar had enough basic knowledge and understanding of technology and of the way their school system worked to envision a program appropriate for their district. They used their NAPSET liaison's assistance less to provide the content of their plan than to assist them in the planning process, which helped them focus their goals, develop a planning strategy, and evaluate their efforts.

Jaspar's plan for the use of technology in special education subsumed several goals tackled independently by other districts at similar stages on the level of use index. District-wide inservice training in instructional applications and classroom management issues was particularly well-received by special educators at preparation/mechanical levels of use. Franklin provides an outstanding example. A highly energetic group, the Franklin team planned and implemented 35 workshops for special education teachers. Moreover, they established a number of "user interest groups" for teachers of specific disability groups, or with particular technology interests, to share experiences and learnings. These user groups provide built-in support systems for "beginning" technology users, and a network through which to exchange new bits of information and troubleshoot problems for more advanced users. In the district as a whole, level of use of technology in special education moved from the preparation stage to the mechanical stage as a result of this focused attention on training and assistance for special education staff.

We found that districts at mechanical levels of use had often developed their technology programs in a rather haphazard manner. It was not always clear what hardware and software was available within the district, or who was responsible for reviewing and purchasing software as demand increased. A number of districts, consequently, focused their attention on developing software and hardware management systems. The most sophisticated of these systems was developed by the Oxford LPT. Wishing to integrate software with curriculum goals and objectives, this team developed a software evaluation form that identifies curriculum objectives, as well as other information needed to determine if a particular piece of software will help to meet a student's IEP objectives. After identifying the appropriate software, teachers are able to locate the software through a database which is designed to catalogue and track all software acquired by the special education program.

Software management systems like the one developed in Oxford do not necessarily immediately increase the level of use of technology within the district, but in the long run, they are essential in supporting the maximum level of appropriate use of whatever technology is available. This was often NAPSET's most effective contribution to a district, particularly where funds had been provided for the purchase of equipment, but personnel had little experience in using or managing the use of that equipment.

Routine/Refinement/Integration. Few client sites had reached this level of use of technology in special education prior to the NAPSET intervention. Those which had focused their efforts on refinement activities; that is, they were interested in reassessing the use of computers in their region/district, in developing more advanced inservice training, and in exploring

linkages with other resources including other NAPSET sites. These sites did not need their NAPSET liaison to provide technological expertise, but took advantage of their expertise in designing needs assessments and evaluating the effectiveness of existing programs. In these sites NAPSET acted primarily as a catalyst, and provided the district with the needed space and opportunity to reflect on existing activities in order to make informed decisions about the future.

Variable #2: District Readiness to Make Change

NAPSET client sites characterized by very low district readiness were discussed above in Section 7.4.1. Very low readiness had a direct impact on NAPSET outcomes, making success unlikely even where teams attempted to choose goals tied appropriately to district needs. Similarly very high readiness seemed to almost guarantee success (although goals still needed to take into consideration level of use and team skills). Most NAPSET sites, however, fell somewhere in between these two extremes on the readiness continuum. These clients needed to consider their district's readiness to make change in order to choose appropriate goals and activities.

"Medium readiness" districts were characterized by either: (1) inadequate resources, but solid district commitment; (2) essentially adequate resources, but a lack of district commitment; or (3) an average amount of resources, and an administration which though not hostile, was not particularly aware of or interested in the NAPSET project. The first case, inadequate resources/solid commitment, is well illustrated by two case study sites, Bremen and Hollis. Both districts suffered from a lack of adequate funding; yet, a commitment to special education, and special education technology, encouraged innovative efforts to fund the purchase of hardware and software. Although budget cuts had reduced the Hollis school day to a five hour, no-frills curriculum, the special education director, by sharing expenses with regular education, had managed to purchase microcomputers for every special education class. Dissatisfied with the type of equipment purchased, however, the LPT used their second year of NAPSET assistance to develop a purchasing plan which, if approved by the Board of Education, would allow special education to begin acquiring Apple computers.

A keen interest in special education technology led Bremen's special education director to apply for a State Innovative Education Grant, which provided the district with $10,000 to purchase microcomputers and software for the special education program. Although Bremen's NAPSET liaison was not involved in the grant application process, the advice and assistance of the NAPSET state team coordinator was crucial. NAPSET also provided the necessary information for the district to make informed choices as to what kind of equipment to purchase. Assistance with

designing appropriate purchasing plans, and developing innovative fundraising plans where district resources were simply not available, were crucial aspects of NAPSET's technical assistance. Microcomputers and adaptive/assistive devices are expensive, and few districts felt that they could rely on the usual district, state, or federal funds to provide the necessary resources. A number of districts took advantage of NAPSET's fund raising workshop as an initial resource development activity.

An inability to access district resources is often evidence of a lack of commitment to special education technology in the upper levels of a district's administration. For example, in Oxford, all evidence suggested that the NAPSET team had received excellent district support. After a highly successful first year, in which the team sought and receive approval to purchase five microcomputers for special education use, their support seemed evaporate, however. The team's progress in the second year was completely stalled while they waited for computers that were never delivered. (Regular education received the computers they had requested, but special education did not.) Thus, while the Oxford team thought they had the support of district administration, they found they had to keep pushing to get the district administration to follow through on its commitment.

Lack of district commitment was more difficult to overcome than a lack of resources, and it often led to team frustration and a loss of team morale, as in the case of Oxford during Year 2. Some teams decided to simply push forward as best they could, even without district support, "making do" with available resources during Year I in order to avoid directly confronting upper level administrators and/or the Board of Education. Concordia provides an excellent example of this strategy. The inservice training that the team planned did not require Board approval, nor did they need any additional equipment to develop and pilot test their computerized IEP system. Their hope was that the success of their Year I NAPSET activities would help them to win over some allies in high positions, who would lend support to future efforts. They were in fact quite successful in establishing themselves as a credible body, and gained the support of an assistant superintendent as well as the district computer coordinator.

Molina chose a different strategy to deal with poor district support. Determined to gain support prior to committing a large amount of departmental resources, the team carefully planned a pilot test, which they presented in proposal form to the Board of Education. By developing a well thought-out plan and presentation the LPT was able to gain Board approval for the purchase of hardware and software, and to prove to them that microcomputers could, in fact, be effective instructional tools with special needs students. Having acquired the necessary

resources and support, Molina was able, during their second year of assistance, to move forward at an accelerated pace.

Gaining district support is sometimes just not possible, and a number of NAPSET sites were considerably less successful than Concordia and Molina in their attempts to do so. One district's refusal to allow release time for team members undermined the project completely in spite of a very committed team leader; in another district, after a very successful first year, the special education director, who was also the NAPSET team coordinator, was fired in order to decentralize special education services in the district. A software evaluation system developed by this team during Year I was never implemented, and initial efforts at long range planning and staff training were stymied. This team, which would have continued at least through a second year with administrative support, was dismantled at a critical juncture.

Variable #3: Nature of the Local Planning Team: Knowledge and Skills re Technology and Planning

We have already discussed two team composition variables above: team process skills and team commitment (see Section 7.4.1). These variables had a direct impact on NAPSET outcomes; that is, regardless of the goals and activities chosen by a particular site, the level of team commitment and the ability of the team to work together cooperatively were critical to the potential success of the technical assistance process.

A team's knowledge and skills in technology and planning, however, influenced the technical assistance process in an entirely different way. Lack of expertise did not hinder the NAPSET process, provided the team chose appropriate goals and activities. Some of the least sophisticated NAPSET LPT's made exceptional progress during their first year of assistance precisely because they were determined to educate themselves.

Knowledge and Skills re Technology. A number of local planning teams had very little technical expertise at the start of the NAPSET project. Efforts to make effective plans for implementing new practices in the use of technology could not be undertaken without some basic knowledge, and a clearer picture of the kinds of technology available and the implications of their use in the classroom or for administrative purposes. These teams had to educate themselves prior to focusing attention on the district as a whole.

Most teams chose to explore software applications during at least one of their on-site visits. Millville spent a day exploring Apple applications. Their focus was on software evaluation, a focus which provided the team with more than exposure to a "potpourri" of software. Developing software evaluation skills is an important step in the process of becoming an effective

decision-maker in the area of special education technology, as it is fundamental to making appropriate purchasing decisions, and to planning an integrated curriculum.

Another very successful strategy for technologically unsophisticated teams was to choose one fairly circumscribed area in which to develop and implement a new practice. Millville chose telecommunications. In the process of going on-line, and learning how to use SpecialNet, the team increased its familiarity and comfort with computer terminology, hardware and software. Moreover, at the end of their year of NAPSET assistance, they had concrete evidence that technology could work for them. They had not just learned some interesting but abstract information; they were actually doing something new with technology.

Unsophisticated LPTs were usually found in districts at very low levels of use in special education technology. These teams, although they lacked knowledge, were often anxious to begin implementing new practices. In particular, they hoped that evidence of success would lend their departments much needed prestige, and bring them support for future efforts. Pilot tests were an excellent means of satisfying this range of needs.

In Molina, for example, team members had very little technical knowledge. Their learning, however, was facilitated by their need to gather information to plan and implement the pilot test. A variety of decisions had to be made: Which population should be targeted? What skills do we want to teach? Which computer applications are appropriate? What kind of hardware and software needs to be purchased? What kind of training do the teachers need who will implement the pilot test? In writing their proposal to the Board of Education, the team had to clearly articulate how word processing would benefit learning disabled students; thus, they had to develop an understanding of how word processing works, what kinds of programs are available, and what the pedagogical benefits of using word processing are. Moreover, in getting their pilot test rolling, the team accomplished something concrete, and was able to feel successful prior to developing a great deal of technical expertise.

Molina's experience was very different from that of Upton, where the team also decided to initiate a pilot test using word processing with LD students. In Upton, however, the pilot test was initiated outside the LPT at the regional level; the NAPSET planning team took no responsibility for the effort other than to arrange for district participation. Because they were not actively involved in the development of the pilot test the team neither increased its level of knowledge and skill, nor its level of commitment to the NAPSET project.

Teams at higher levels of technical expertise could focus their attention more fully on district-wide efforts. Depending on the level of use of technology in the special education program as a whole, they could choose from a wide range of possible goals and activities. Concordia, for example, had a fairly sophisticated team, but most of the special education staff were non-users. Taking this into consideration, they chose to focus on general awareness activities for district staff, and to pursue work on a computerized IEP system as a team. Rather than attempting to introduce the whole staff to the IEP program right away, a pilot test was implemented. District-wide staff training, it was decided, would follow the "mini-fairs," which were designed to move all special educators into the orientation stage on the level of use index.

One of the most technically sophisticated teams involved in the NAPSET project was the Franklin team. Although the grass roots level of use in Franklin was only at the preparation stage, team members were or became routine users by the end of the first year. This team had a good sense of the potential for technology use in their district; they applied to NAPSET for assistance in learning how to make those things happen. Staff training was the primary focus of the Franklin effort, but with an emphasis on institutionalizing the learning process through the establishment of "user groups" and a monthly newsletter. The Franklin team moved the entire special education staff beyond the preparation stage to a mechanical level of use.

The success of the Franklin effort demonstrates the importance of designing staff training efforts that go beyond the classic inservice workshop. The newsletter and user groups established mechanisms for on-going support that would remain in place long after the departure of the NAPSET liaison. This type of peer support has been found to be an extremely effective strategy for school improvement, both because it is cost effective and because the support can be accessed whenever necessary (Loucks-Horsley & Hergert, 1985). Inservice workshops are often unsuccessful because they fail to provide support during the period in which a new practice is actually being implemented.

Interest and Skills re Planning. As has been stressed throughout this report, the NAPSET technical assistance model put a great deal of emphasis on planning as fundamental to the introduction of new technology and/or new practices in any school district. Almost every district involved in the project followed an agenda which included needs assessment, the establishment of goals and objectives, the development of implementation strategies, and the evaluation of project results. Districts were encouraged to follow these steps not only on a "grand scale" as they implemented the NAPSET project in their districts, but as they implemented each of the goals and activities designated on their CAA.

NAPSET liaisons promoted long range planning, including the development of written plans for the implementation of special education technology, in almost all districts. We found, however, that a number of the case study sites intending to write long range plans during their first year of NAPSET assistance were unable to do so. Although we suspected that planning team members did not have the interest or skills to engage in this process, we discovered through our analysis that this was not usually the case. More often other site conditions seemed to inhibit long range planning; for example, the low level of use of special education technology throughout the district and/or the low readiness factors discussed above. Thus, while the project's overall planning orientation remained viable, we found that writing a long-range district plan for technology use in special education was not an appropriate goal for all our client sites.

We found that with regard to planning ability, teams fell into one of three categories:

1. LPTs whose members already had highly developed planning skills, and wanted to learn more about "content"; that is, how to ask the right questions about technology;

2. LPTs whose members accepted the planning orientation of the NAPSET project, but had little experience, knowledge or skills in this area; and

3. LPTs who were either unwilling or unable to take a planning approach, and who, thus, engaged only in isolated and discrete planning activities throughout the year.

Teams in these different categories tended to use NAPSET technical assistance rather differently. As we noted above, in larger districts LPT members tended to be administrative personnel rather than classroom teachers. These teams tended to have more developed planning skills, as for example in Concordia County and Manchester County, an intermediate unit. Both of these teams used their NAPSET participation as a means of acquiring expert information about special education technology. Although at very different levels of use, and in need of quite different kinds of information, both of these sites successfully maintained team energy between site visits, and planned and carried out events and other activities without extensive contact with their liaison. Because they knew how to plan, and had a clear set of goals in mind, these sites did not need their liaison to act as a "hand-holder." They could effectively use their liaisons during on-site visits to provide direction and to assist as an objective outside evaluator.

Where team members already possessed good planning skills, the NAPSET liaison most often acted as a "catalyst" and "resource linker" (see Havelock, 1973). By participating in the NAPSET project, these clients gave themselves the time and the space to work on an issue that might otherwise have fallen through the cracks. It was not so much that they needed NAPSET to structure the task for them; rather, they needed NAPSET to allow them the time to address the problem. In addition, NAPSET provided them with up-to-date, expert information, not easily accessed within their own districts. In Manchester County, for example, NAPSET provided nationally known expert consultants to work with the team in a three day planning session. As a resource linker, NAPSET provided a very important service. NAPSET's liaisons had their greatest impact, however, with clients who had an interest in planning, but lacked the skills; these were the project's "best fit" sites.

Whether highly sophisticated with regard to technology use, or just beginning to think about it, clients who used NAPSET to learn about and institutionalize a change process seemed to get the most out of their participation. At these sites, NAPSET liaisons took on the role of "process helper" (see Havelock, 1973). Not all of these clients wrote long range technology implementation plans; however, they took to heart NAPSET's presentation of the Concerns-Based Adoption Model, they focused a significant amount of effort on needs assessment, and they carefully evaluated the long range implications of their actions.

Franklin and Oxford represent two client sites at different levels of use, both of whom had highly successful experiences with NAPSET. Both of these sites took advantage of the "planning expertise" of their NAPSET liaison, although they engaged in very different technology-related activities. Franklin, for example, was most concerned with training its special education staff to use the abundantly available hardware and software in the school district. Their interest in taking a "planning orientation" arose in part out of their unique circumstances: they were a resource-rich district in which the failure to teach anyone how to use the equipment had meant that a lot of expensive hardware and software was under-utilized or used ineffectively.

Rather than jumping right into training activities, the Franklin team first wrote a statement of philosophy, and a set of goals and objectives tying computer use to the special education curriculum. Next, they surveyed their teachers to determine the areas of greatest need. Having clarified their goals, and determined the most immediate needs of their staff, the LPT could plan a series of appropriate, and hence effective, workshops.

Franklin also took a great interest in the concept of "institutionalization." Recognizing that the key to having a lasting impact was to establish practices or programs that could not simply be dropped when NAPSET left the district, they established a process whereby a teacher's use of technology would become a part of their yearly evaluation by their school principal. A "principals' workshop" was conducted by their NAPSET liaison, focusing on what teachers should be doing with the technology vis-a-vis the computer curriculum, and evaluation skills. By integrating computer skills into the yearly evaluation process, the LPT established an understanding in the district that these skills are fundamental to the curriculum and not just optional activities.

Oxford was less enthusiastic than Franklin about NAPSET's planning focus during the initial phases of the NAPSET project. An all-teacher team, they were more interested in immediate skill development and practical changes that would facilitate technology use than in abstract planning activities. Rather than beginning the NAPSET process by formulating goals and objectives

as Franklin did, they began by focusing on software evaluation and developing a more efficient software acquisition and review system. This was an important and useful activity, but as the team became more involved, and clarified their primary goal -- curriculum integration -- they realized that they needed to think beyond simply matching software to curriculum goals and objectives. A plan, which would include supportive structures for the appropriate use of software, was necessary.

Toward the end of the first year of technical assistance, Oxford's liaison presented NAPSET'S "Cosmic Planning Guide", and worked with the team to develop a set of goals and target areas for a three year special education computer plan. During the second year, the Oxford team focused their efforts on developing guidelines for each of these areas, and implementing their Year 1 goals in the areas of software acquisition and staff training. Through these activities, the Oxford team has become a cohesive and effective planning group respected throughout the district.

Franklin and Oxford were two of NAPSET's most successful districts. These sites were able to take advantage of NAPSET's planning orientation, institutionalizing processes that would allow them to continue to address special education technology issues in the future. Their local planning teams developed both process and planning skills, and in the case of Oxford, the team gained a tremendous amount of technical knowledge as well. Both teams seem well-established within their districts, and barring any unforseen, dramatic changes in the availability of resources, or district organization, they will continue to meet even after NAPSET has left their respective districts. We do not know, however, whether the skills developed as a part of the NAPSET planning process will be transferred to other school improvement efforts. To evaluate NAPSET's organizational impact at this level would require a much longer term evaluation effort than was possible in this project.

The NAPSET project was least successful in districts that had either no interest in planning, or were so constrained by adverse district conditions that they could not really engage in a planning process. Very low readiness districts seemed unable to find the time and energy to focus on "the larger questions". They wanted quick-fix solutions to immediate problems. Northboro was the classic example. Their greatest gain from their NAPSET participation was advice on software and peripherals to assist a visually impaired high school student. Although they had planned a series of training sessions, their inattention to adequate needs assessment, and failure to analyze district conditions, seemed to underlie their inability to get these workshops off the ground.

Summary of Findings

- Specific goals and activities affected implementation outcomes according to their appropriateness for particular site conditions.

- Three site-specific variables determined the appropriateness of goals and activities for a particular site:

  -- the level of use of technology in the special education department;

  -- a district's readiness to make change; and

  -- the knowledge and skill of the local planning team in the areas of technology and planning.

- Districts at very low levels of use were most successful when they focused on raising the general level of awareness and interest in technology among special education staff, and on implementing a concrete, circumscribed practice.

- Districts at moderate to higher levels of use were most successful when they focused on developing management systems and writing long range plans for integrating technology into the curriculum.

- Where resources, or district support are lacking, it was critical for teams to address these issues first before moving on to the implementation and institutionalization of innovations.

- The NAPSET approach was most successful with teams that were concerned with planning issues and wished to develop their skills in that area.

7.4.3 How did liaisons' individual characteristics and skills affect the outcomes of the NAPSET technical assistance process?

Looking at a data matrix of outcomes at all the client sites in the project's first year, it was evident that individual liaisons had no simple impact on the success or lack of it. All the liaisons except one (who worked with only three sites altogether) had clients with both highly successful and fair-at-best outcomes. No liaison's clients were all highly successful, just as no one's were all unsuccessful. The spread of success indicated that no liaison was providing assistance of a kind or in a way that differentially affected their clients' overall chance for success. In addition, client evaluations indicated a high degree of satisfaction with services received from all the assistance providers. Nobody received evaluations significantly out of line with those of their colleagues.

Looking more closely at the different components of technical assistance, we were able to identify a core set of skills which seemed to underlie the ability of the assistance providers to work productively with clients within the framework of the NAPSET project. Many have been identified in previous studies of assistance provision (Lieberman, 1977; Crandall, 1977); their importance was corroborated by the NAPSET study. These included:

- a good understanding of group dynamics;
- good organizational skills;
- the ability to facilitate group meetings;
- the ability to run training workshops;
- the ability to build trust and rapport with clients;
- the ability to build clients' confidence in their own abilities;
- a collaborative approach;
- good diagnostic skills with respect to both individual capabilities and organizational intricacies;
- a pro-active, initiative-taking style of assistance provision; and
- the ability to demonstrate a new approach to problem-solving and change-making both directly and by example.

All NAPSET liaisons demonstrated these skills, although there was some variation among them in level of different skills. Given

that most of the above are complex interactive skills, we were not surprised to find that those liaisons with the most experience in the field worked most productively with their clients and the resources they had to offer. This does not mean that their sites were the most successful overall; the data matrices show clearly that this was not the case. Success depended much more on site conditions, technical assistance strategy, and intensity and duration of assistance, variables discussed under the next three questions. However, it does mean that liaisons with more experience were more successful with difficult situations, and in almost all cases their clients were able to make some progress toward meeting their CAA goals. Nonetheless, even in those sites where the most experienced liaisons were working, certain factors stood in the way of success.

What exactly does "more experienced" mean? Essentially it meant having had experience working with different kinds of clients in a variety of school settings in the past. Past experience seemed to provide liaisons with the flexibility and resourcefulness necessary to identify and facilitate appropriate changes in technology use in a variety of unfamiliar situations, even in situations where obstacles were placed in the path of success.

Another skill embedded in several of the items listed above is good group process skills. NAPSET assistance was built around working with groups of people, and the local planning team's ability -- or lack thereof -- to work together productively directly affected progress at all of the sites (see Section 7.4.1 below). LPT group process skills were not addressed directly in the project -- there simply was not time, given the limited number of liaison days on site. However, those liaisons with an understanding of group process issues, who built group process considerations into their work on site, were often able to improve the productivity of their teams, especially those teams with poor group process skills. Again, this does not mean these liaisons' sites had the most overall success. It means they were better able than their colleagues without these skills to avoid certain obstacles to LPT productivity.

This raises an important point about NAPSET technical assistance. The NAPSET model, built around local planning teams, requires equal participation of liaison and LPT in the change effort. The liaisons' role was that of trainer, facilitator, and consultant, thus their effectiveness depended on the active commitment and involvement of their client teams.

Individual liaisons certainly had strengths and weaknesses in different content areas. The most significant of these was variability in the technical expertise. Some of the liaisons were sophisticated technology users; others were not. Yet we found no correlation between the level of a liaison's technical

expertise and success at his or her sites. There are several explanations for this. First, technical expertise at the client sites was quite low. It was rare for any of the liaisons to be challenged with technical questions that they could not answer directly. Second, the project library and other NAPSET staff provided excellent back-up resources which liaisons could consult for answers to difficult technical questions (see below). Third, and perhaps most importantly, much of the technical assistance provided was not oriented to technology per se but rather to the planning and implementation of change. Because this is an area in which The NETWORK has developed considerable expertise, all of the NAPSET staff were highly skilled at providing change assistance.

In some instances, when their particular expertise was required, liaisons visited other sites than their own -- for example, one liaison spent a day at a colleague's site introducing a piece of writing software which he had helped to develop. In other instances the project brought in outside experts to consult with clients whose needs required unusually specialized expertise. In general, however, we found that the liaisons brought their particular strengths to bear on the situations at their sites in unique but most often productive ways. Thus while there were some very good "fits" between particular liaison skills and client needs, there were no demonstrably bad fits.

The overall resourcefulness and adaptability of the NAPSET liaisons were at least partially attributable to the project design, which emphasized a collective approach to the development of technical assistance strategies, and encouraged the sharing and discussion of on-site experiences among assistance staff. Each liaison developed at least one semi-structured presentation on a topic of demonstrated client interest (e.g., software evaluation, long-range planning for technology) which could be adapted to the specific needs of individual sites. The liaisons then "taught" these presentations to their colleagues, giving the entire staff a common repertoire of activities from which they could draw. The result was that all had a large repertoire of tested assistance activities and often employed very similar on-site assistance strategies.

In addition, regular staff meetings provided a forum for the exchange of technical experiences and ideas, and a chance for liaisons to both offer and receive advice and assistance from their colleagues. More ideas relating to approach and assistance were exchanged in the circulation of site visit reports written after each liaison's on-site visits. These procedures were developed to broaden the liaisons' experience "vicariously," and foster imaginative problem-solving through the understanding of a wide variety of school situations and technology needs. Thus the project itself provided a loose structure for the provision of

technical assistance and encouraged flexibility and imagination through its internal staff support procedures.

Summary of Findings

- Assistance providers possessed a core set of skills in the areas of diagnosis, group process and facilitation, training, resource linkage, and information provision.
- Consistency in the provision of technical assistance was in part a result of the project's collective approach to the development of technical assistance strategies.
- The liaison's individual style and/or particular expertise had no direct impact on the districts' chance for success.
- It was less important for assistance providers to have sophisticated technical expertise than it was to have an expertise in planning for change.
- The assistance providers could not make change happen alone -- their effectiveness depended on the active involvement and commitment of the local planning team.

7.4.4 How did the intensity and duration of the technical assistance provided affect outcomes at NAPSET client sites?

The technical assistance model used in the NAPSET project provided fairly low intensity assistance to client sites. The role of the project liaisons was that of trainer, facilitator, and local capacity-builder. The project offered up to five full days of on-site assistance to independent sites, and ten days to multi-district sites (the IEUs and the SEA). While not all sites made use of their full complement of on-site days, many did; the average number of on-site days was four. In general, in spite of some variability, we can say that most sites received approximately equivalent amounts of on-site assistance.

There was more variability in the intensity of liaisons <u>off-site</u> contact with their clients. The project offered unlimited off-site consultation, via telephone, electronic communication, and the U.S. mail, and NAPSET staff tried to check up on their clients every four to six weeks whether or not the clients had

contacted them. In practice, because project staff were always busy, those sites which called their liaisons on their own initiative received more off-site assistance. The model thus favored those clients who knew enough to be able to ask for specific assistance, and who took the initiative to request it. In general, the NAPSET model worked well. We discuss the specific impact of intensity and duration of assistance on outcomes in the section below.

Intensity of Assistance

The specific number of on-site days provided tended to vary according to each site's need for assistance, and need varied according to district goals and team characteristics. Certain activities required the liaison's on-site presence -- training, planning assistance, and software evaluation workshops, for example. Other activities could be accomplished without the liaison's active participation -- development and administration of needs assessment surveys, planning for departmental or district-wide trainings, etc. Districts around the preparation level of use, with many concrete informational questions and needs, tended to use the full complement of their on-site days. Districts at higher levels of use and clearer ideas about how they wanted to use technology, used their liaison more as a consultant than a trainer or facilitator, and needed less on-site assistance to accomplish their goals.

A certain amount of on-site assistance was necessary to accomplish the minimal requirements of needs assessment, goal development, and the adaptation of local solutions however, and to ensure that things kept moving on site. Less than three liaison days on site (or a combination of liaison and consultant days) really was not sufficient to accomplish what NAPSET set out to do. Those teams that received less than three on-site days had serious problems meeting their CAA goals.

The individual districts represented on the Oswego County ISD team were cases in point. Because they divided their ten on-site days between both the regional planning team and each of four participating districts, each local team received no more than two days of individualized on-site assistance. The districts had established independent LPTs, each with its own CAA, but with so little liaison time each they were unable to consolidate their LPTs into effective working units. Less than three days was not enough time for team members to establish good working relations with their liaison: local team members from the ISD complained that their liaison did not really listen to their opinions or take time to understand the local district conditions (not a complaint leveled against this liaison from any other site). In fact, because of the special arrangements for dividing his assistance among all four participating ISD districts, he did not

have time to attend to them in the same way he attended to his other sites.

Upton is the other site which received less than three days of on-site assistance -- it received only one. Because Upton failed to accomplish the in-district activities specified in its CAA, it could not move forward and there was no point in the liaison returning. The LPT simply did not keep up with its cooperative assistance agreement; recognizing this, it cancelled all liaison visits after the first.

The Influence of Team Process Skills and Leadership. Beyond specific goals, the level of process skills of the team was the most relevant indicator of need for the liaisons' presence on site. Teams with poor working skills, and especially with poor leadership, tended to depend on their liaisons' presence to get work accomplished. These poorly organized teams tended to meet infrequently if at all between site visits, and often let the responsibility for organizing district tasks fall to their liaison. In these sites, the liaisons' presence provided both the incentive and the necessary organizational talent to get work accomplished. Because they needed more direction, more frequent on-site assistance would have been helpful to teams with poor group process skills.

Teams with better team skills were better able to make use of their liaisons' time on site. They did not use the liaisons' time to get organized; rather, they were organized, had established clear and specific needs, and knew how to utilize the liaisons' assistance without a lot of direction. They were able to make great progress between visits; could accomplish more through phone contacts; needed their liaisons' presence less. The best example of this kind of team was the Manchester County ISD. The team used its liaison primarily as a consultant. They knew what they wanted from her and knew how to make good use of the assistance she provided; consequently, even though she spent little time on site, this team was among the most successful in terms of concrete accomplishments.

As was mentioned earlier, leadership was an important component of the LPTs' ability to work together effectively as a team. Where it was lacking, liaisons worked to develop leadership to take responsibility for a team in their absence. In some cases this strategy was effective. In Oxford, for example, a leader emerged from a leaderless team and, with her liaison's encouragement, became instrumental in the team's ultimate success. Because the liaison's role was properly that of a trainer, facilitator, and consultant, s/he could do very little for a team that did not ultimately take responsibility for its own outcomes, however. NAPSET liaisons could not make up for a critical lack of leadership or team commitment by spending more time on site.

In Northboro, responsibility for the NAPSET fell to a new administrator who had little interest in or commitment to the project. Because the leadership was not committed, team members did not take the project very seriously. The team failed to make use of all their allotted on-site time, and failed to follow up on activities they initiated. They were satisfied with a low level of results; there was little more their liaison could do without the team itself taking more initiative.

At the "Northeast" SEA, the liaison tried to compensate for a lack of team leadership by visiting more often and providing the nominal leader with a great deal of support, both on and off site. The main result of this was that the team came to expect her to share in task-related responsibilities which were rightfully theirs. Her position as trainer/facilitator/ consultant was compromised and the team did not ultimately gain from the extra time she put in with them.

Level of Use and Readiness to Make Change. Teams with poor team skills were often characterized by low readiness, and at a low level of technology use. These teams usually needed to educate themselves about technology and increase the local readiness for change before they could move forward with local applications of special ed technology. This process took time and beyond a certain number of training activities, more liaison time on site could not speed up the process. Sometimes requests for more on-site assistance simply masked the failure of a team to put in adequate time on task itself. It was local work, not liaison assistance, that was really needed. Millville is a good example of a district with very low levels of technology use and a disparate team with weak leadership, which pulled itself together and accomplished a great deal without a lot of liaison time on site. Millville's liaison realized after one site visit that the team would need some organizing leadership if it was to be galvanized into action. He impressed this point upon the team leader, outlined some possible ways to proceed, kept in touch by phone, but left it to the leader to do what had to be done on site. The result was that the team conducted a needs assessment, determined to expand their use of existing technology, educated themselves about all the possible uses of their hardware, and conducted a district-wide training event to pass on this knowledge. In the process of educating themselves the team also acquired a good sense of its own capabilities. Because so much of what was accomplished in this district had to be done by the team itself it is not clear that more liaison days on site would have added significantly. What the liaison did do was convince the team of what they had to do, and help with suggestions about how to do it.

The NAPSET experience highlights the necessarily cooperative nature of the relationship between districts and external

assistance providers. NAPSET's low intensity assistance forced local teams to put time and effort into their projects in the absence of their liaison's direct involvement. Those districts with the leadership, team skills, and readiness to make change were able to assume their share of responsibility in the project and did best with the low intensity on-site assistance. They were able to make effective use of their liaisons' visits, using them to structure the year's activity and serve as natural milestones in the process of fulfilling their CAA. The visits provided deadlines for in-district activities, and an incentive for meeting the deadline. (Clients mentioned this often: their sense of accountability to the liaison was an incentive to get things done.) They also created natural interludes during which the team could take stock of their accomplishments and refocus on the next task.

Those districts with poor team skills and low levels of use and readiness to make change had more trouble with the low intensity assistance. Because they were less productive between liaison visits they got less out of each visit. In extreme cases like Upton, where the team failed completely to live up to its cooperative responsibilities, there was no point in visiting at all. For teams which needed a lot of direction more frequent liaison visits would probably have been helpful to keep people focussed and on task, but more important to the team's ultimate ability to help itself would have been a longer period of assistance. We discuss this variable in the next section.

Duration of Assistance

Among the variables assumed to affect the provision of technical assistance was the duration of assistance. Given the demonstrated importance of follow-up assistance (Loucks-Horsley & Hergert, 1985) we predicted that a second year of assistance would significantly affect what districts would be able to accomplish through the NAPSET project. We therefore chose fourteen sites from the pool of thirty-eight first year sites to receive a second year of assistance. Included in that fourteen were the seven case study sites.. In addition to following the progress of those sites in their second year, we conducted telephone interviews with selected sites which received only one year of assistance. We wanted to compare their progress with that of the two year sites and discuss the potential impact of a second year of assistance on their implementation efforts.

We found that both the level of technology use on site and the level of team skills affected the need for assistance over an extended period of time. In addition, we found that the project's more ambitious goals, the institutionalization of new practices and the institutionalization of a process for addressing issues relating to technology in special education, were only realized in sites which had a jump on the

implementation process prior to NAPSET's intervention, and could focus on the time-consuming process of institutionalization in the second project year. We discuss these factors below.

NAPSET sites at lower levels of use, especially those with fewer team skills, took longer to get organized and engaged in the process of making change. Once started, they worked more slowly than teams with a higher level of team skills because the process of working together as a team had to be resolved as well as the specific steps leading to the accomplishment of their CAA goals. For many, the process of getting organized and focused on concrete tasks took most of the year. Molina, for example, had a time-consuming false start and did not really begin to work productively until the end of the first year. Fulfillment of their CAA goals did not begin to occur until well into the second year.

Teams at lower levels of technology use were less self-directed after one year of assistance than teams starting out at higher levels of use. These teams were in particular need of continuing, follow-up assistance. Millville, the project's least sophisticated site, identified appropriate goals and made significant progress toward their achievement in the first year. They felt abandoned right when they "could have made real use of NAPSET's expertise" however, when we were unable to offer them a second year of assistance. Concordia, a district initially at a low level of use but with good team skills, felt that their second year of assistance was extremely important in enabling them to consolidate, and in some cases institutionalize changes begun in the first year.

The goals a team chose also appeared to influence whether one year of assistance was sufficient or not. NAPSET provided the opportunity for LPTs to plan major changes in the way their special education programs would be run. Some teams took advantage of this opportunity and undertook ambitious projects with long-term goals; others chose very concrete, circumscribed goals and did not think in terms of long term change. Teams in the second group were often able to accomplish their goals in the first year, and did not feel they needed a second year of assistance. For the first group, however, one year was not enough time to complete the longer range goals, and a second year of assistance was greatly appreciated. A time-tested axiom was reconfirmed once again: significant educational change takes time.

In most cases a longer period of assistance would have been (or was) more useful than greater intensity assistance over a shorter period of time. Even in districts with ideal conditions -- high levels of knowledge and use in the area of technology, an administration supportive of change, and an effective planning team with good leadership -- the process of change could not be

accelerated beyond a certain point. Teachers and administrators are busy, decisions take time to be made, and even the smallest change involves many intermediate steps. In addition, as discussed in the preceding section, things had to happen on site between liaison visits for the visits to be productive. While some sites with lower levels of team skills may have benefitted in the short run from receiving more frequent liaison visits, ultimately they had to learn how to accomplish things on their own. The learning process itself took some time; for this reason as well a longer period of assistance probably would have addressed the need for more assistance more effectively than a greater number of visits concentrated in a short amount of time.

Moreover, the NAPSET model favored planned change over a longer period rather than short term, circumscribed changes. Our overarching goal was to build skills and capacity to continue the process of integrating technology into special education programs, and to institutionalize the changes that were developed. The planning approach encouraged local districts to consider the long range implications of different technology applications, and to think about specific changes in the context of on-going, integrated change. Not all districts took this approach, but for those who did, one year was not enough time to both learn how to be change agents and actually make concrete changes in technology use.

In particular, the institutionalization of procedures and practices could only be accomplished over an extended period, during which practices were developed and shown to be effective. Effective programmatic changes were the vehicle for developing on-going capacity to make change in the district and for demonstrating their enduring value. Additional time was then needed to work out and work through the necessary steps to institutionalize.

Institutionalization is an on-going process, during which the innovation is refined, communication is maintained with upper level administrators, a public relations effort is mounted, and a strategy for finalizing the institutionalization is developed and carried out. It is difficult to even think about institutionalization before the mechanics of the innovation are worked out, however. A team needs to be at a certain level of use before the long term considerations of institutionalization become a concern to them. Thus teams at low levels of technology use spent the first year (at least) working out their programmatic changes. Those teams which were already launched on the process of technology implementation when the NAPSET project began were much more likely to have institutionalized some part of their process or practice at the end of two years. Those beginning at the beginning with NAPSET, while they made important first steps and often implemented concrete changes, were usually just beginning to look at their programs in terms of long term, integrated

development at the end of two years. For these sites (which were the majority of NAPSET's clients) an even longer duration of assistance would have been helpful.

Summary of Findings

- Given the need for tasks to be accomplished between liaison visits, five days of on-site assistance over the course of a school year was generally the maximum amount that an LEA could use effectively.
- More intense assistance could not compensate for lack of leadership, poor team skills, or low readiness in the district.
- Most sites could have benefitted from assistance offered over a longer period of time, particularly at sites characterized by low levels of use and low readiness.
- The development and implementation of a practice often took two full school years.
- Institutionalization occurred in only a few NAPSET sites over the course of two years -- sites where technology was in use in special education prior to the intervention, district readiness was high, and team skills were well-developed.

7.5 Organizational Context

The NAPSET project consciously included several multi-district sites in its client groups in both project years to test the effectiveness of the technical assistance model at several different levels of organization. Many special ed programs are coordinated and/or administered at a regional level, and regional resources centers often provide training and equipment in special ed technology to member districts. State education agencies also play a role in providing services and training in this area.

These multi-district organizations seemed to be an obvious place to focus assistance. Set up to facilitate the dissemination of information, they could take advantage of NAPSET's expertise in the area of special education technology. NAPSET staff, it was

felt, could train trainers at regional centers, who would then be able to pass on information and strategies to many more districts than the project could reach directly.

Realizing that school districts have a lot to learn in the areas of special ed technology, NAPSET hoped to promote the sharing of information and the coordination of services at many levels. It seemed to make sense for associated districts to share the task of educating themselves, rather than duplicating each others' efforts and possibly mistakes. Moreover, money could be saved through multi-district collaboration, particularly through sharing of expensive equipment used with special populations. By getting individual districts to coordinate their purchases and set up equipment sharing procedures, more people would have greater access to specialized technology, which they could not otherwise afford. With these goals in mind, several multi-district sites were solicited to participate in the NAPSET project.

NAPSET staff assumed they would have to adjust their standard repertoire of assistance strategies to meet the needs and conditions in different organizational contexts. Because they wanted to develop effective strategies for many contexts they deliberately sought out several different multi-district configurations to participate in the project. During the first project year, the multi-district sites included a state education agency, two regional intermediate units, and one pair of neighboring districts that applied to the NAPSET project as a team. We have referred to these four sites in the preceding sections where relevant. Here, we look specifically at how organizational context impacts the provision of effective technical assistance at a multi-district level. All four sites are described in the preceding section of case study and vignette synopsis; they are reviewed here with additional information salient to the success of their NAPSET undertakings.

<u>"Northeast" Department of Educational and Cultural Services, Department of Special Education</u>. Team members originally envisioned providing the same kind of technology assistance and support to local "Northeast" districts that NAPSET provided to clients all over the country. The team was composed of local district representatives concerned about local autonomy, and who lacked any experience with statewide projects, however. They did not know how to think about providing services at the state level. Moreover, the State Department itself supported a "bottom-up" approach to educational change, and was reluctant to impose statewide mandates of any kind on local school districts. Thus the activities of the team were highly circumscribed. Any kind of directive or mandatory activities were entirely unacceptable, and even state-approved guidelines for planning for technology in special ed were problematic if they were to be "sent down from on high."

In the end, the team developed two quite passive information products, a SPED tech information database to be included in the State Information Resource Bank and a technology planning guide. The planning guide was to be disseminated to school districts throughout the state without any follow up or support activities. The databank simply waited for inquiries. In the end, the links between the NDECS team's work and the efforts of individual local districts to develop special ed technology applications were rather tenuous.

The Manchester County Intermediate Unit, which served the 21 school districts in Manchester County, established a regional NAPSET planning team which included both IU employees and special education directors from five local districts. The team focused its CAA goals at the regional level. The IU had a well-established history of providing information, training, and services to its member districts. It communicated frequently with the districts and all the special education directors in the county, and met together regularly. Thus, there was a great deal of communication going on in the IU before NAPSET ever arrived and there were systems in place for implementing and disseminating initiatives.

The NAPSET planning members were chosen from a larger group of special education directors which had convened to develop plans for disseminating certain special education software throughout the region. Thus team members both had experience working on special education technology issues and were accustomed to working together. The five special education directors were responsible for local level dissemination of the NAPSET team's initiatives also. Each one set up their own local planning team to address technology issues specific to their district. Largely because the special education directors were interested in, supportive of, and accountable to each other, they each managed successful local planning teams without any direct NAPSET assistance. Thus many of the planning principles introduced in the regional team reached the districts via the five special ed directors, while the procedures developed by the regional team were disseminated locally through the IU infrastructure.

The situation in the Oswego County Intermediate School District was somewhat different. While many low incidence programs and services were provided through the ISD, communication between the ISD and its member districts was less routinized, frequent, and friendly. There were no regular meetings between member districts and no established system for disseminating information and training to all districts on a regular basis. Rather, each district established its own relationship with the ISD, pursuing available resources according to its needs and its interests.

Given the ISD's practice of serving districts individually rather than developing regional programs, and given the makeup of the ISD planning team (which included only one active IU staff member -- the rest were local representatives), it seemed to make sense for the NAPSET liaison to provide individualized technical assistance to each participating district. The hope was that each local representative would learn from the assistance provided to the others, but would focus on an issue that was of particular concern at home. The district representatives set up their own local planning teams, and planned to visit each other when on-site technical assistance was provided in the other districts, but they established no regional goals whatsoever. The success of this strategy thus depended on local team effectiveness, and on the amount district representatives could gain from listening to the technical assistance given to their colleagues.

Redcliff/Jaspar was an ad hoc association of two districts which wanted to work together to develop technology use in their departments. They were in the unusual situation of being able to coordinate need areas, so they could share a single CAA and several liaison-provided training events as well. Their liaison met with the two local planning teams both separately and together over the course of the year. The districts were located next door to each other and at a considerable distance from the nearest urban center, so they had a sense of needing to take advantage of each other's support. Probably most important was the fact that the two coordinators were good friends and wanted to work together, however.

Our analysis of the multi-district sites followed the same format of the larger cross-case analysis: we considered the sites in light of our four basic research questions, modified where necessary to address multidistrict conditions.

Did the personal style or approach of the assistance provider affect outcomes at the multi-district sites?

Observations of the assistance providers at work and interviews with them about their multi-district clients suggest that their assistance approach was similar in single and multi-district sites. The same sensitivities and skills that were important for working with local planning teams were important with regional planning teams. Liaison weaknesses which hindered the provision of expert assistance operated at all levels, as did strengths. Some additional knowledge and experience was useful for working at a regional or state level, however. Because assistance was to be provided at the multi-district level, an understanding of the regional organization itself was essential. Either experience working at the regional level, or a good understanding of the relationship between different parts of the organization and of the politics of interaction between different levels of authority

was important. The context for making change at the regional level was different from the context at the LEAs, and the liaison had to understand this difference to be able to advise effectively.

Since regional or state plans automatically involved the cooperation of many individual LEAs, decision-making and implementation of new programs almost always required more negotiation and politicking -- and more time -- at the multi-district level. Liaisons spent more time with process and planning issues in multi-district sites on the whole, although there are exceptions to this generalization. (The most notable exception is the Manchester County IU, which was so well organized that it worked <u>faster</u> that many LEAs.)

<u>How did the site-specific conditions affect the success or failure of the technical assistance process at multi-district sites?</u>

Three site-specific factors were identified as having a significant impact on outcomes at client LEAs: the district's readiness to made change, the LPT's process skills and commitment to the process, and team leadership. Positive values for these factors was a predictor of success; negative values made the achievement of successful outcomes much less likely. In general, these factors had the same impact on success in the multi-district sites. Where regional readiness to make change was high, as in Manchester County, the implementation of new practices went smoothly. Where administrative and financial support for the changes were low the assistance process took much longer and changes were much less definitive. Leadership and team process skills and commitment were equally important to success. Leadership was possibly more important in multi-district sites than in LEAs as the team often consisted of people with no prior history of working together. The "Northeast" SEA is a good example of a team with poor process skills and a weak leader unable to pull the team together into an effective working unit.

The "Northeast" SEA also suffered from the lack of a state-wide perspective among its team members. Just as LPT members need to be able to think in district-wide terms, teams constituted at the region or state level needed experience working at and the ability to think about change in terms of a higher level of organization. "Northeast" SEA team members had no experience developing state-wide dissemination projects; in fact their understanding of the proper relationship between individual districts and the state left little room for proactive technical assistance. This team had difficulty conceiving effective state-wide assistance programs. As it was, the question of how to effectively disseminate the products of the team's labor remained unresolved at the end of a year and a half.

The most significant finding of our work in multi-district sites follows from this: regional or state level organizations had to have a well-established infrastructure and working relationships with their constituent districts for NAPSET to be able to work effectively with them. Specifically, they had to have procedures in place for communicating, training, and disseminating substantive materials to their region. In one year, NAPSET could not teach a team how to function at a regional or state level and expect it to make substantive progress. The Manchester County IU had such an infrastructure and a history of working cooperatively with the districts. Team members knew how to work together at the regional level, the IU has systems in place for implementing their programs, and together they developed a highly successful regional training program.

The Oswego County ISD was constituted quite differently and the outcome of NAPSET's work with them was much less positive. Local autonomy was an issue for Oswego County districts and the ISD, sensitive to this, held back in the promotion of its services. It operated, in effect, like a large service center, which member districts could utilize if and when they chose. Thus, the ISD had no procedures in place for working with several districts together, which in turn had no history of or commitment to working collaboratively. This showed up in the way the Oswego County ISD team operated. All four participating districts were more interested in focusing on their own concerns than in finding ways to collaborate with their colleagues. Consequently, they made little use of the potential for sharing experience and knowledge, choosing instead to divide their alloted assistance among four separate local teams and meeting with only limited success in all of them.

Collaboration requires extra effort; it is most successful when there is a strong commitment to the collaboration, and there are systems in place to facilitate its occurrence. Redcliff/Jaspar's experience would seem to suggest that even an ad hoc collaboration can be successful, if there is sufficient commitment to making the collaboration work. In practice, we found that Redcliff/Jaspar behaved more like a single district than a multi-district site however, in that their CAA specified individual district activities, not joint collaborative projects. The two districts were in the somewhat unusual position of sharing common needs, so that one CAA could be written to serve both of them. Collaboration came in the sharing of assistance and training activities, and in the rendering of mutual support, but not in developing supra-district programs. The coordination necessary for developing successful multi-district programs seems to require a pre-existing regional or state-wide educational infrastructures through which such programs can be implemented.

How did the choice of particular goals and activities affect outcomes at the multi-district sites?

As with individual district sites the appropriateness of goals chosen affected how successful a team could be with them. Similarly, the level of use of technology in the site and the planning team's level of knowledge and skills around technology and planning for change affected what kind of goals were appropriate. Planning teams with limited technology skills needed to educate themselves before they were in a position to know what their regions needed. Teams with high levels of technology skills still had to consider the level of use in their region in general in choosing what kind of programs to implement region-wide. And teams with poor planning skills did best to concentrate on establishing and accomplishing concrete tasks rather than undertaking elaborate planning activities.

Because multi-district teams were working above the level of individual LEAs, however, the specific goals the teams worked on were necessarily somewhat different. The purpose of working at the state or regional level was to coordinate the provision of services which would be valuable to all districts in the region. Thus the teams' work had to be general enough to be applicable in sites with very different local characteristics. Appropriate multi-district goals tended to focus on the development of region-wide planning and training activities, the establishment of resource bases which the entire region would draw upon, and/or the establishment of electronic communication and reporting systems within the region. One regional site from the second year of NAPSET assistance set up a FIDO bulletin board to enable local districts to send student reports to the regional office electronically, facilitate communication between superintendents, and provide a means for teachers to share technology information and tips among themselves. Another set up a series of region-wide teacher training workshops on technology applications for special education. Another wrote a guide to planning for implementing new technology at the local level.

Appropriate goals, then, were those which provided services at a regional level, and were general enough to accommodate different levels of use in the constituent districts. The Oswego County ISD illustrates why this was important. The Oswego County team chose not to focus assistance at the regional level, choosing instead to divide their assistance among the four participating districts. Since the small amount of technical assistance provided to each district individually was not sufficient to adequately address their local needs, the local district teams were dissatisfied with the assistance they received. Moreover, the ISD team members did not really take advantage of the assistance provided in their colleagues' districts. There were small accomplishments at this site, but in general the strategy of providing customized assistance to the ISD districts did not

work well. Not enough attention could be given to the individual districts' needs; and little sharing occurred at the regional level. The one significant outcome in the Oswego County ISD was the creation of a committee of all the district special education technology coordinators in the region. While this team had no direct connection to NAPSET, it was convened by the ISD staff person involved with NAPSET project and embodied many of the NAPSET goals which were never realized on the ISD's NAPSET team.

How did the intensity and duration of the technical assistance provided impact outcomes at multi-district client sites?

The general conclusions drawn for single district sites with regard to intensity and duration seem to hold true for the multi-district sites as well: longer duration assistance is generally more valuable than a greater intensity of assistance. Teams with low level process skills were an exception in that it seemed that they could have benefitted from more liaison time on site.

Although it is difficult to draw general conclusions from such a small sample, it seems clear that multi-district sites need at least two years to implement a program effectively. Working at the regional level requires not only the development of an innovative practice, but the dissemination of that practice to member districts. Either direct follow-up assistance with new users, or assistance to regional level providers, less skilled in handling the problems of new users, is essential.

- Although NAPSET offered regional units more time on-site (10 as opposed to five days over the course of the year), most of the multi-district sites were unable to take advantage of the extra days. While the original plan was to use the additional time to provide both regional, and locally focused assistance, this strategy was found to be fundamentally flawed (as demonstrated at the Oswego County ISD). The more successful strategy was to address regional issues with a multi-district team, and to allow the team to develop dissemination strategies. Much like the local district teams, regional teams could not find the time to consume ten days of assistance effectively. Arranging meeting times, and carrying out necessary activities between on-site visits, required a similar structure to local district assistance. Five or six days over the course of a year appeared to be optimal.

In the one case where more assistance was provided, the "Northeast" SEA, the liaison took on much more responsibility for carrying out tasks than was appropriate for an external consultant. Because of poor team process skills and weak leadership, she found herself doing work that was the responsibility of team members. In the long run, this strategy proved ineffective, as the team never developed the skills needed to maintain its activities after the liaison left the district.

Summary of Findings

- Liaisons working in regional contexts needed to pay particular attention to the organizational structure.
- Planning and process issues were even more important at this level than at the local level.
- Regional or state level organizations needed to have a well-established infrastructure and working relationships with their constituent districts for NAPSET to work effectively with them.
- Assistance was most successful when teams focused on regional goals; i.e., electronic communication between districts, establishing a regional resource base, or regional staff training. Dividing assistance between local districts to address local needs was not an effective strategy.
- Two years of assistance is absolutely necessary to the development, and effective dissemination of new practices.
- Five or six days of on-site assistance over the course of a year was optimal; teams could not take advantage of 10 days.

8.0 TECHNICAL ASSISTANCE STRATEGIES THAT WORK

The goal of the NAPSET project was to develop a set of successful technical assistance strategies that could be used with local and regional educational agencies to implement on-going use of technology in special education. These strategies were all played out within the structure of a single approach or technical assistance model, described in detail in Part 1 of this report. Nonetheless, variations in the strategies were essential to success; it was assistance designed to meet the particular needs of client sites that made the difference between success and failure.

Three types of outcomes were assessed to indicate the success of a particular technical assistance strategy:

1. the development and implementation of new technology practices;

2. the institutionalization of new technology practices;

3. the institutionalization of new processes for dealing with technology issues on an on-going basis.

As discussed above (see Section 5.2) these outcomes were not independent of one another. Best understood as levels of success, they represent progressive stages in the process of assisting new technology practices. Some NAPSET clients progressed through all three stages during the course of a two year assistance period, while others accomplished only goals represented by stage 1 outcomes. Although considered "less successful" by project standards, our evaluation suggests that the implementation of a new practice might be judged as a highly successful outcome, depending on conditions at a particular client site prior to the intervention. Considering the variation in site-specific conditions, it was unrealistic to expect that all clients would be able to institutionalize both new practices and new processes at the end of a relatively short assistance period.

In this section of the report we draw together our findings by discussing successful technical assistance strategies at three types of client sites. Distinguished by the outcomes they were able to achieve by the end of their NAPSET involvement, we identified the three types as follows: those that implemented new practices; those that institutionalized new practices; and those that institutionalized not only practices, but also processes for addressing technology issues in the future.

8.1 Technical Assistance for Success in the Implementation of New Practices

For those sites characterized by either a very low level of use of technology in special education, or a significant lack of district support, implementing new technology practices represented a high level of success in the NAPSET project. The goals in this case must be to increase the general level of technology-related knowledge and skills among special educators, or the level of district support. Achievement of these goals takes time and can only be initiated in a one year, or even a two year assistance period.

A number of strategies proved effective with clients a low levels of use. Often there was a need to raise the level of knowledge and skills among team members as well as other personnel. Some teams chose to focus on self-education first, while others incorporated self-education into the task of raising the general awareness level and enthusiasm for technology among colleagues. The latter strategy was more effective in broadening the base of support for a technology program in special education; however, in some districts, considering the available time and energy for the NAPSET project, this was not a realistic strategy.

In these districts, on-site visits were most often used to raise the level of technology awareness of team members, and to train them in specific technology applications that could be disseminated to others. A popular activity for those who chose this strategy was a software review day. Through exposure to a variety of software programs and systematic software evaluation techniques these teams became familiar with some of the issues involved in choosing appropriate software and implementing effective instructional practices.

For teams interested in generating broad-based support for the use of technology in special education, small technology "mini-fairs" were highly successful, providing a series of presentations and hands-on sessions in which teachers and administrators could explore technology applications. A successful mini-fair was sometimes expanded into a series of more indepth workshops or a summer training session which could provide much more intense technology training. Such a strategy is successful only if a district is able to provide teachers with the hardware and software necessary to begin experimenting with new practices after the training.

For districts lacking in such resources, a more productive strategy appears to be conducting a pilot test. This strategy has a number of advantages. First, the process of planning for the pilot test involves the team in educating themselves about technology issues. To make decisions concerning the type of pilot test, the kinds of hardware and software required, the

training necessary for teachers, etc., the team must become familiar with various technology applications, how they have been implemented in other districts, and implications for instructional and administrative practices. If the pilot test must be approved by an unsupportive administration or board of education, the team will need to be as knowledgeable as possible in presenting their proposal.

Pilot tests are also advantageous because they do not require a large investment of resources. With a relatively small investment, a team is able to demonstrate that technology is beneficial to special education students, and thus to substantiate their case for increased investments. In districts where purse strings are tightly controlled this may be the only means of developing the upper level support necessary to the development of a substantive technology program.

Whether considered a pilot test or not, choosing a single technology application and implementing a fairly circumscribed new practice seemed to be an effective strategy both for educating a team of relative newcomers to technology, and for developing a sense of accomplishment. Success is empowering, and for those with limited knowledge or experience the ability to use a new piece of technology is very exciting.

Not all teams chose to focus on instructional practices, as many individual changes may be necessary to implement one new practice. Implementing a new administrative practice was often less complex and easier to implement, as it was dependent on fewer variables. Inexperienced teams, for example, were often quite successful with the implementation of telecommunications systems. Just as with a pilot test, the implementation of a telecommunications system was a means of developing team knowledge and skills by developing a familiarity with computer terminology, hardware systems, telecommunications software, etc. From this foundation of knowledge and greater confidence, teams felt able to move on to more ambitious technology innovations.

To summarize, in districts characterized by low levels of use of technology in special education or a significant lack of district support, successful technical assistance strategies are those which promote the development of knowledge and skills among team members and expand support for technology use in special education in the district as a whole. This can often be accomplished through the planning and implementation of a single, circumscribed application, or through the development of a pilot test to demonstrate the effectiveness of technology with special education students. Since districts at this level of technology use have a fair distance to travel, technical assistance over an extended period of time is recommended to continue to the next phase: to facilitate institutionalization of practices.

8.2 Technical Assistance for Success in the Institutionalization of New Practices

To begin working on the institutionalization of new technology practices we found that a client site had to have already reached a preparation/mechanical level of use, and had to be able to expect a moderate level of support from the district's administrative hierarchy. If a special education department is considered peripheral to the district's educational mission, it is unlikely that resources will be made available for the institutionalization of the use of technology in special education. As discussed above, in these districts gaining support through pilot tests, raising awareness levels, etc. is necessarily a priority effort, just as raising the level of knowledge and skills among special educators is necessary in districts with very low levels of use.

In districts that have reached a preparation/mechanical level of use, implementing a new practice is a less time consuming process. People are "ready"; they don't need to be convinced that technology will benefit their students, or that they can learn to use technology effectively. They want to know how: Where do I start? What software is appropriate? How do I schedule students on the computer? Training workshops can focus specifically on these issues, giving teachers the knowledge and skills necessary to go back to the classroom and begin using the available technology. Follow-up support will certainly be necessary, but a district can begin to take advantage of those who are most comfortable with the technology by encouraging an "each one teach one" relationship between earlier and later users.

The need for follow-up activities, particularly on-going support for new users, cannot be overemphasized for districts desiring to move from implementation to institutionalization. External consultants will not always be available; thus, districts need to develop "in-house" means of providing that support. Strategies that focus on ways to keep users informed of the activities of others, including problems that arise, solutions that others have found, effective software programs, management strategies, etc. are particularly effective in this regard. Two successful strategies used by NAPSET sites to institutionalize follow-up support were district technology newsletters and ad-hoc user groups that came together around particular technology applications or disability groups.

Institutionalization requires that a planning team think beyond changes in practice to the level of organizational change. The issue is not simply getting people to use the technology, but maintaining on-going and robust use of the innovation. On-going support is essential, but so are the development of curriculum plans, the incorporation of computer technology into district

budgets as line items, the development of software acquisition, evaluation and management systems that are sensible, convenient to use and efficient, and some means of evaluating on-going use and its appropriateness to various instructional and administrative practices.

Special education is often left out of district computer plans, either because general educators are unclear about how to incorporate the needs of special students, or because they do not believe that access to technology is necessary for these students. A special education technology committee can write its own purchasing and curriculum plan and, providing the plan is approved, set standards for the use of technology within the special education program. Writing a coherent and well-informed plan that addresses purchasing, curriculum, and staff development issues is a complex task, but it can provide team members with a challenging and fulfilling experience as they begin to sort through district needs, constraints, desired outcomes and realistic scenarios.

Written plans are only successfully institutionalized as practices if teachers follow the recommendations. One means of encouraging increased use is to develop on-going support from building administrators and central office staff. This means providing workshops and training for administrators as well as teachers. Supportive administrators understand the programs they are supporting and can recognize where problems might arise, before they become overwhelming. When evaluating teaching practices, building administrators should be able to recognize appropriate technology use. If teachers know that the appropriate use of technology is considered integral to instructional practice in their school, then they will attend to it in the same way that they would attend to any new curriculum.

Support for on-going technology use should be provided both by persons and by management systems that provide for easy access to hardware and software and an efficient means of identifying appropriate programs. Setting up a software acquisition, evaluation and distribution system at the building or district level is essential to avoiding haphazard growth, duplication of efforts, and general confusion. This type of administrative structure legitimizes technology use at the organizational level, communicating to teachers that the district is committed to the on-going integration of technology into the special education program, as opposed to haphazard use by a few innovative individuals. Incorporation of hardware and software purchases, repairs, etc. into district budgets is another means of demonstrating that commitment, and of planning for expanded use.

Helping people develop these plans, systems, and processes are technical assistance strategies that encourage the institutionalization of new technology practices. The

development of on-going support activities for users, such as newsletters, workshops and user-groups; the development and approval of special education technology plans that cover purchasing, curriculum and staff development issues; the development of efficient management systems; the incorporation of technology practices into yearly teacher evaluations; and the inclusion of technology-related resources in district budgets: all of these activities focus on transforming organizational practices, thus creating an environment where individuals will be provided with encouragement and supported as they struggle to become routine and proficient technology users.

8.3 Technical Assistance for Success in the Institutionalization of a Process

Districts with technology in place in the special ed program and a planning team at a routine level of technology use are in a position to work toward institutionalizing a process for addressing issues relating to technology in an on-going way. Technical assistance strategies which accomplish this goal are considered the most successful because they enable districts to plan for the future, anticipate technology issues before they become intractable, and make decisions about appropriate technology use in a proactive rather than a reactive way. Only a small number of the NAPSET sites were in a position to strive for this kind of success however, as it requires a kind of forward thinking that is rarely achieved without considerable prior experience working with technology, and an appreciation of the complexity of the issues involved in its successful use in education.

It also requires a planning team with excellent process and planning skills as well technical knowledge, highly committed leadership, and solid district support for special education in general as well as for technology in education. Without these things, it is difficult for a planning priority to survive.

Most of the growth of technology use in special education (and in education in general) has occurred in a haphazard manner, in response to pressures to participate in the microcomputer revolution, to the activity of one or two enthusiastic technology champions, and to special purchasing opportunities which seem too good to pass up. This is neither surprising nor reprehensible -- districts learn by doing what the most important considerations in this new area are, and how to facilitate the integration of technology in their particular situation.

It is by working through the implementation of new technology practices that educators gain an appreciation of the complexity of issues involved in implementing technological innovations in special education. These include:

-- the fact that each innovation involves a great number of different changes, both large and small, and that these must be addressed if the innovation is to endure;

-- the fact that new technology is expensive and purchasing plans must be developed for implementation over a several year period;

-- the fact that the technology itself is changing rapidly; thus the importance of investing in flexible systems; and

-- the importance of follow-up support for training, and the recognition that training is an on-going process which must be institutionalized to accommodate new staff, new needs, and changes in the existing technology.

The need to set up a process for coping with these issues in an on-going, planful way once again becomes clear as the issues themselves emerge in the process of working through the implementation of new programs. Outside technical assistance is particularly helpful at this point to help districts figure out the most appropriate and effective planning process and how to institutionalize it.

Strategies for institutionalizing such a process depend on an understanding of its importance among upper level administrators, and a financial commitment to making it happen. This commitment translates into release time for planning, support for the on-going training of district staff, and a general openness to the suggestions of the planning body. Specific strategies revolve around cultivating and maintaining such administrative support, and developing ways to incorporate the planning function into on-going, existing structures within the school system.

Strategies in the first group include identifying an advocate in the upper administrative levels and keeping him or her informed, both formally and informally, of the progress of the planning group. Documentation of this process and periodic formal presentations to principals, superintendents, and the school board make a favorable impression and draw these administrators into the process, especially if progress is significant. By networking with outside districts and making presentations at regional educational technology conferences the planning group can gain outside recognition for its work and build itself into a credit to the district. Finally, fundraising efforts to support the planning process strengthen the legitimacy of the planning group and ease the financial burden of administrative support for the process.

Because the payoff for planning is, for the most part, long term and indirect, it is often considered a luxury in a school environment with so many immediate demands on teachers' time and administrators' support. For this reason planning efforts are particularly vulnerable to what Michael Huberman calls "environmental turbulence" (Huberman, 1983); i.e., budget cuts, loss of a planning team leader, supersession by some other, more "basic" curricular need. Strategies for institutionalizing a planning process must take this into account and look for ways to incorporate these functions into permanent school structures. In a small district this may mean incorporating technology issues into the on-going work of the special education department, and devoting time to them at weekly department meetings. In larger districts it makes sense to establish a subcommittee to develop technology plans and priorities for special ed, then establish representation on both the district curriculum planning committee and the computer planning team to ensure that these priorities receive attention where decision-making occurs.

For districts with resources, hiring a Coordinator of Special Education Technology to organize and oversee the development and implementation of technology activities in the department is an effective strategy. In other districts it is more feasible to consider establishing release time for a planning subcommittee as a line item in the department budget. For districts in which the Special Education Technology Coordinator is a volunteer position, valuable support can be provided by regular meetings with other coordinators in similar positions in the region. Often an IEU can facilitate the gathering of Sped Tech Coordinators from the region. This strategy worked very effectively in one of NAPSET's multi-district sites.

To summarize, while establishing on-going procedures for addressing issues relating to special ed technology is the most important endeavor a planning team can undertake, it is also the most difficult to accomplish. Districts must have established technology practices, a skilled planning team with good leadership, and substantial upper level administrative support to attempt to establish on-going planning procedures. They must maintain the support of the administration, while finding ways to link the planning process to more permanent structures, or else establish more permanent structures themselves.

Significant success can be achieved at sites with lower levels of technology use, planning skills and district support, however, through the implementation and institutionalization of new technology practices. Indeed, those goals are much more appropriate for less experienced sites, and necessary prior steps to the achievement of more ambitious goals.

9.0 CONCLUSIONS

Outcomes of the NAPSET Approach to Technical Assistance

NAPSET's approach to technical assistance placed its clients' informational needs within a framework of TA which focused assistance on the process of planning and implementing technological innovations in special education. This approach was based on the belief that educators need help with the process of adopting a technological innovation as much as they need help that focuses on the technology itself. Without an understanding of how to integrate the new technology into existing programs and practices, technological sophistication would be of little use to special educators. Moreover, the innovations adopted should be implemented in such a way as to promote their becoming a permanent part of the educational curriculum, and not simply one more bright idea that would not survive a diminution of interest, or the loss of the district's technology champion.

NAPSET technical assistance thus focused on organizing, educating, training, supporting and advising Local Planning Teams, which would become the technological change agents in their districts. The liaisons worked to build the capacity of districts to make technological innovations themselves by strengthening team members' knowledge and skills in the areas of both special education technology and planning and implementing educational change. Liaisons focused particularly on helping clients establish a framework for change in the district, pushing them to create a larger context for the individual innovations they were contemplating. This process-oriented planning approach was central to the project's underlying goal of building district capacity to handle technological innovation effectively.

NAPSET's process and planning approach was, with a few exceptions, well-received in the districts. Many project participants said this was the most valuable part of the NAPSET TA, and several reported using the planning techniques they had learned to address entirely unrelated educational issues. Procedures for conducting organized needs assessments, and the determination of strategies based, in part, on the Concerns Based Adoption Model proved especially powerful. The experience of working together with colleagues on an effective committee, and learning how to deal constructively with upper level administrators, were highly valued.

Approximately 15% of NAPSET's clients proved unwilling to accept the project's planning approach. They refused to engage in planning activities in a serious way, preferring to forge ahead with activities they had already determined were necessary and appropriate. These districts often accomplished what they set out to accomplish, but the larger NAPSET goal of establishing

procedures for continuing to address technology issues in the districts was not achieved. In these districts, any process for dealing with technology in special education ended at the end of the NAPSET project.

More often, however, it was difficult to engage educators in planning in the abstract; LPTs understood the importance of longer range planning only after they had gone through the process of setting and accomplishing concrete goals. This reconfirmed a classic tension between educators' desire to "do something" in a concrete, hands-on way, and TA providers' urge to promote an appreciation of the need for longer-term organization and goal-setting. NAPSET mediated this tension with a two-tiered approach to technical assistance: liaisons established and worked toward the accomplishment of concrete goals with their clients, then went back and placed these in the context of a larger change effort, the long range planning often coming toward the end of their work with the districts. (Interestingly, it was representatives from the districts that received two years of assistance who were the most vociferous advocates of planning for the future. At the project's second year orientation meeting, for clients about to begin receiving NAPSET TA, the veterans of one year of assistance warned their novice colleages that they should begin planning now for the end of the year when NAPSET assistance would no longer be available to them.)

NAPSET's experience with clients' resistance to planning reconfirmed the time-honored TA axiom that you can not just tell people what you know to be true and expect them to act on it. People have to experience the truth of the thing themselves. Hence the importance of going through a process of planning and implementing change: people learn by doing how to organize themselves and move toward the effective implementation of an innovation. By going through this the first time with the assistance of a professional, districts were guided around pitfalls and made conscious of the process, so as to be better able to replicate it in the future.

This approach proved to be particularly effective for working with technological innovations. Given the nature of educational technology -- changing rapidly, as the technology itself is refined and new applications are developed -- any school district which gets involved with technology must do so with a flexible attitude, expecting to make additional changes in its practices in the future. Implementing technology in education is not a one-shot deal, it is an ongoing, evolving approach to education. For districts to keep on top of both technological advances and their own staff's continuing educational and training needs, they must engage in an ongoing evaluation and planning process. NAPSET's process and planning orientation makes this kind of TA particularly well-suited to the needs of educators contemplating technological innovations.

Significance of the Local Planning Teams

The reasons for selecting a core group of district personnel to assume responsibility for technology innovations are numerous. Through the Local Planning Team a group of district staff acquire knowlege and skills in both educational technology and the process of implementing educational innovations. This training enables them to make decisions about how their district can best utilize technology in special education; as they learn to work together effectively, they are in a position to implement their decisions. The experience of working on an LPT builds commitment to the chosen innovation and ownership of the project, and the team provides the person-power needed to see it through to completion. The LPT acquires the knowlege needed to direct its district's future technology efforts, and planning skills that can be transferred to other projects as well.

The LPT provides a structure for involving various district constituencies and perspectives in the decision-making process as well. Most NAPSET LPTs included both teachers or categorical specialists and administrators, and their multiple perspectives were valuable in establishing a technology plan responsive to the needs of all parties involved. LPTs benefitted from a strong leader who could organize the group, provide excitement and possibly vision, and see that work was accomplished in the district between liaison visits, especially because those visits were few and far between. It facilitated the team's work to have the Special Ed Director represented on the LPT as well. Beyond that the important attributes of an LPT member were a commitment to the NAPSET process, good group skills, and a willingness to engage in planning activities. Experience with technology, while helpful, was not essential.

Individualized Assistance

The structure of NAPSET technical assistance, in which each Local Planning Team determined its own goals on the basis of its own needs and resources (and in consultation with its liaison), enabled the project to work effectively with districts at very different levels of sophistication and technology use. Individualized assistance was provided within a structured assistance plan: basic assistance strategies, developed collectively by the NAPSET TA team, were used repeatedly, with small modifications, at many different sites. Thus liaisons were able to create individualized assistance plans out of a pool of basic techniques and procedures; the result was cost effective, customized technical assistance.

It was important to be able to individualize assistance precisely because each district has a different set of needs and requirements with respect to technology. One of the great

strengths of educational technology is its flexibility, and the multitude of ways it can be applied to meet the varying needs of special students. The corollary to this is the fact that each district must figure out what are the most appropriate applications for its particular needs. Thus the success of individual districts' efforts depended a great deal on the appropriateness of the goals and activities it chose to undertake. The TA provider's advice and assistance was a crucial part of these decisions.

NAPSET's individualized approach to assistance provision worked effectively in all sites except those that could not live up to the obligations of the Cooperative Assistance Agreement, whether due to a fundamental lack of interest on the LPT, a lack of support from the district, or unrelated "environmental turmoil" which made it impossible to give the project sufficient attention. Better than 85% of the sites were able to take advantage of the individualized assistance; only four out of thirty reneged on their agreements entirely.

The Consequences of Providing Low-intensity, External TA

NAPSET technical assistance provided up to five days of on-site liaison assistance, plus unlimited off-site consultation. This approach required LPTs to assume primary responsibility for making change in the district. Liaisons provided advice, direction, training, information and evaluation; LPTs carried out strategies determined jointly with the liaison in his or her absence. All but a few isolated districts were able to assume this responsibility, and low-intensity assistance enabled the project to provide assistance to a large number of districts in a cost-effective manner.

Most NAPSET sites did well with the limited amount of on-site assistance. There was work to be done in the districts between visits, this work took time, and with a few exceptions NAPSET clients used that time productively to fulfill the obligations of the CAA. The exceptions were those sites -- approximately 15% of the total -- with poor leadership and group process skills, which relied on their NAPSET liaison to organize their work for them. NAPSET liaisons' role was not designed to include hand-holding; to the extent that they had to engage in hand-holding with their clients, additional time on site would have been helpful.

Rather than more liaison time on site, we concluded that a longer duration of assistance would have been very valuable. It was clear from the experience of working with clients for both one and two years that at least two years was required for LPTs to make significant changes in practice. Although different teams with different process skills had different "start-up" times, in most cases LPTs were just beginning to work well together at the

end of one year. While it was possible for teams to accomplish concrete, circumscribed goals by the end of one year, in no case were the more ambitious project goals of institutionalizing change or a process for making change accomplished in less than two years. In fact, those districts which did get involved in institutionalization were invariably already deeply involved in technology before NAPSET began working with them; i.e. they had been working on the changes they ultimately institutionalized for longer than the two years NAPSET spent with them.

The conclusion, not a new one but one worth repeating, is that change takes time, especially change that is as process-oriented as NAPSET, and that TA support is as important in the follow-up stages as it is at the initiation of the change. Many clients expressed regret at not being chosen for a second year of assistance, and follow-up phone-calls to these sites indicated that they were struggling to maintain some form of an LPT in the absence of support. Teams which received two years of assistance, on the other hand, were in a much better position to maintain themselves: they had accomplished more, had gained more recognition, and were better able to win approval for continuation from their district administrators.

The effectiveness of NAPSET's low intensity technical assistance depended to a great extent on the TA providers' hidden off-site activity gathering, organizing, evaluating and cataloguing the latest information on educational and special education technology, as well as networking among technology and special education experts across the country. This behind-the-scenes activity enabled liaisons to provide clients with a synthesis of current information in their area of interest, as well as to connect them with other school districts and experts with similar interests and concerns. The TA team used off-site time to discuss difficult client situations and develop assistance strategies as well. Without these unseen activities liaisons' limited on-site activity would have been far less effective. Low-intensity technical assistance requires the active involvement of district personnel in the change effort. The success of this kind of assistance thus depends in part on the liaison's skill in teaching members of the LPT how to be change agents. In this project the liaison's ultimate task was the empowerment of the Local Planning Team -- with information, training, skills, and encouragement. Liaisons had to walk a fine line between being too directive, thereby failing to allow their clients to learn to make their own decisions, and not giving clients the full benefit of their knowlege. The process of assistance provision was crucial: liaisons had to enable their clients to learn by guiding them through the process of making an educational change. Here again, the importance of understanding the process of implementing educational innovations overshadowed the importance of providing the most detailed technical information. NAPSET was training change agents, not

technology wizards. In any case the technological sophistication of NAPSET's client sites, which was sometimes greater than that of their liason, never outstripped their liaisons' ability to be of assistance.

The experience of working with NAPSET clients reconfirmed several benefits of external technical assistance. Most importantly, NAPSET liaisons served as catalysts for change in their districts. The presence of an outside expert gave district people a sense of accountability to the project, and provided an important incentive for living up to agreed upon obligations. It was not that they were doing anything tremendously unusual or difficult, but that they would not have done it themselves without the liaison's presence to focus interest and create a sense of priority about the task.

Outside consultants also empower a Local Planning Team simply by their association with it. Experts from outside the district have a kind of clout that ordinary district personnel rarely have: they often have a direct line to upper level administrators, for example, and their expertise is treated with unusual respect. LPTs acquire a certain legitimacy, authority, and prestige simply by working with outside consultants; moreover, they are often able to cut through bureaucratic roadblocks by labelling something "a requirement of the project."

In addition, the liaisons offered an outside perspective on the situation in their clients' districts, the perspective of someone uninvolved in local politics and unbiased by any personal stake. This position allowed them to see more clearly what the districts' programmatic priorities might be, and critically evaluate the LPT's work such that both negative and positive comments were more likely to be heard and appreciated. The liaisons' credibility of course depended on the accuracy of their perceptions about the district. It required that they "do their homework" in the district; however their short time on-site did mean they had to depend to a large extent on LPT members' reports and their own past experience working in schools to understand their client districts' situations. In most cases their past experience stood them in good stead to evaluate conditions in the NAPSET districts; in a few, inaccurate information was responsible for inappropriate recommendations.

District Support Required by the NAPSET Model

NAPSET required five days of release time for LPT members participating in the project. This was a crucial minimal requirement, without which teams would not have had time to meet with their liaison or work on the goals they set for themselves. This release time created psychological space to work on the project as well as the actual hours, important for

school staff overburdened with endless tasks and responsibilities. This release time represented the bulk of the project's monetary cost to participating districts, however.

NAPSET did not require costly investments in technology. LPTs were most often concerned with determining how to make the most effective use of their districts' existing technology. (While NAPSET deliberately sought to serve some districts with low levels of technology use, all the districts the project worked with had some technological resources already. Experience leads to the belief that there are virtually no districts which have not made some investment in educational technology at this point.) If additional funds were available for the LPTs' use, decisions centered on how to expend them most judiciously.

Overall administrative support for the NAPSET endeavor was important to an LPT's success also. While release time implied a certain level of support, it did not guarantee approval of specific projects or goals. Skeptical administrators could complicate the LPT's task greatly, and teams with upper level support were often more successful than those without. While not a requirement for success, assurance of upper level support has a positive impact on LPT morale. A supportive administrator can cut through beaurocratic roadblocks and greatly facilitate the implementation of a project; conversely, a skeptical administrator can create endless detours and cast doubt on the team's ability to make any significant changes. While some teams were able to develop strategies to work around obstinate administrators, in the long run their progress would be hindered by lengthy approval processes and the inaccessability of district discretionary funds.

Effectiveness and Limitations of the NAPSET Approach

NAPSET's flexibility was among its greatest strengths: it could accommodate well to the specific (and very different) needs of a wide variety of districts. The approach worked successfully in districts at all levels of technological sophistication; however, districts beginning with low levels of knowlege and use needed more liaison time on site, and could not realistically aspire to institutionalization within the project period. These districts needed extra assistance getting oriented to technology and learning to work together effectively on a planning team. Because they required more time up front getting started, it took them longer to get to the point of actually accomplishing concrete goals. The process of institutionalizing these goals would have required a longer assistance period than NAPSET could provide.

Readiness to make change rather than technical sophistication was the most accurate indicator of success in the NAPSET project.

Sites with low readiness -- poor leadership and team skills; lack of district support -- were least able to make use of the assistance provided. Nor could NAPSET do much about "environmental turbulence" -- general problems in the district which made it impossible to give the project adequate attention. Where five days of release time, LPT energy and/or minimal resources were not available, even extensive consultation could not galvanize the district into action. The NAPSET approach required the active participation of district personnel. Where this did not occur, and it did not in approximately 15% of the districts, the project was not successful.

It was difficult to evaluate where the project was most successful by comparing outcomes in one district with outcomes in another. What might have been a small step at one site was a major accomplishment in another. The magnitude of each district's success could only be evaluated in relation to itself. Keeping this in mind, it is possible to say that NAPSET TA had the most dramatic impact on districts at a medium level of technological sophistication, with a high readiness to make change. These sites were able to learn the most from their liaisons, and to make most use of what they learned. Sites at lower levels of use had to spend considerable time educating themselves about the technology, an important and necessary first step to action, but one which precluded their making significant practical changes in the time allotted them.

More advanced sites were in a better position to help themselves. The major contribution NAPSET could make in technologically sophisticated districts was to help them figure out how to organize their use of technology most effectively. While this was a concern in all districts, the more advanced sites were most aware of its importance. Having mastered the earlier stages of technology use -- preparation, mechanical and routine use -- they were now concerned with the refinement and integration of their various systems. NAPSET provided an invaluable opportunity to determine how to make best use of an often impressive but poorly managed set of resources.

The greatest limitation the NAPSET project faced was time. Although most NAPSET sites received only one year of assistance, it is our conclusion that at least two years are needed for districts to take full advantage of a process-oriented approach to technical assistance. This approach requires each district to evaluate its needs and resources to determine an appropriate set of goals to work toward; only then can it proceed with the implementation of these goals. NAPSET provided no packaged deals, convinced that the process of determining appropriate goals and activities was as important as their implementation to the overarching goal of district capacity building. Institutionalization, the process through which proven practices are integrated into the district's repertoire of standard

procedures, requires even more time as campaigns are mounted, the practice comes under scrutiny, and administrative support is courted.

Few districts were able to do more than begin the process of institutionali- zation in the two years allotted by the NAPSET project. And yet, without including institutionalization into the project agenda, all the work of the prior two years could easily be lost. It is not enough to provide assistance at the beginning; follow-through and follow-up assistance are crucial to insure the survival of the innovation. This is not news: the importance of follow-up assistance is emphasized in many important studies of educational change (Anderson et al, 1985; Crandall et al, 1982; Loucks et al, 1981; among others). Nor is it out of line with research to expect a minimum two year period of technical assistance. In the two major studies of school improvement efforts in the last five years, two years was the shortest duration of assistance that made a difference (Crandall et al, 1982; Louis et al, 1981).

Corroboration with Earlier Research on School Improvement and Change

In the course of the project, NAPSET confirmed many of the findings of these earlier studies of school improvement efforts. Among the corroborated findings were:

- the significance of in-person technical assistance for schools involved in the implementation of an innovation;
- the need for sustained assistance over time;
- the importance of teacher involvement in the planning and implementation of the innovation;
- the importance of administrative support to the ultimate success of the innovation;
- the essential role of internal leadership in the change process; and
- the important contribution of external assistance.

We suspected that the problems and technical assistance solutions characteristic of technological innovations might differ in some essential ways from other kinds of educational innovations, however, and that these differences might affect the implementation process. In the NAPSET project this was, in fact, true. Because educational technology is such a new field, there are very few "proven practices" in the use of technology in special education. This means that each school district must make its own decisions about how to utilize the

technology -- there are no "formulas." It does not mean each district must re-invent the wheel -- much has been learned already about which applications work best in particular learning situations. It does mean that the district must put time and energy into working out the appropriate technological solutions to its own particular needs.

The R&D Utilization Study (Louis et al, 1981) points out that no educational innovation is "permanent", but technological innovations are particularly subject to change. The rapidity with which the technology is changing has a number of consequences for both educators and technical assistance providers:

- The explosion of micro-computer technology into the schools means that districts have a new need for both technology experts and people who can interpret the significance of the technology to them.

- Administrators are anxious about spending money for technology which may be outdated in two years. This is a legitimate concern which must be addressed by those responsible for planning the district's technology sytems.

- Districts need to build flexible technology systems, which can be added to and upgraded with technological advances.

- Districts must recognize the need for ongoing staff development, to accommodate both new staff and new technology, and to provide follow-up training for more advanced users.

- In this context, it is particularly important for technology planning teams to understand the process of introducing new educational practices in their districts. This is, perhaps, the unique contribution that NAPSET has made to the technology technical assistance process.

Finally, a technological innovation is not just one innovation but rather a bundle of related innovations. Some are small but some involve significant changes in the organization of educational services. These changes are both personal and organizational and may combine:

- new administrative procedures (e.g. computerized record-keeping systems and IEPs);

- new inter- and intra-district communications systems (e.g. telecommunications and mainframe/micro linkages);

- new administrative and classroom skills for district personnel to learn;

- o new curricula;
- o new classroom organization; and
- o new approaches to teaching.

The point is that all educational innovations involving the introduction of technology, no matter how small, have many ramifications for the people involved in their implementation. Many districts have found it helpful to establish structures to help personnel cope with the numerous changes as they arise; structures such as user support groups, newsletters, and regular internal training events. The NAPSET Local Planning Teams served this additional function of providing support for their members as they worked through the changes associated with implementing technological innovations.

Additional Findings

To conclude, we summarize the findings of the NAPSET project which extend or differ from outcomes of other studies which have examined the implementation of educational innovations, namely the R&D Utilization Study (Louis et al, 1981) and the Dissemination Study (Crandall et al, 1982).

The most significant difference between the focus of these studies and that of NAPSET is the nature of the innovation. The older studies looked at the implementation of discrete, bounded and identifiable innovations while the NAPSET innovations were both less concrete and more variable. Both the magnitude and the nature of the NAPSET changes varied greatly from site to site. Moreover, the process of determining what changes would be appropriate was a central component of the NAPSET technical assistance process. While this was an important aspect of the RDU program also, the nature of the innovations involved allowed NAPSET to develop new understandings about the application of technical assistance.

Both the variability of the innovations and the process of their determination derive from a central tenet of the NAPSET technical assistance model, namely the importance of attending to the process of making and supporting educational change efforts. NAPSET's emphasis on process and planning has resulted in somewhat different outcomes than those of studies of more clearly delineated proven practices. On the one hand, it was more difficult to quantify outcomes -- because each site fashioned its own innovation none were directly comparable, and evaluation criteria were not clearly established in all cases. Moreover, because time was spent in the planning and development of the NAPSET innovations, many sites did not have time to reach their

goals by the end of the project and fewer concrete accomplishments were recorded.

On the other hand, the process of determining appropriate goals and developing customized ways to meet them created the opportunity for some of the NAPSET Local Planning Teams' most significant -- and hard to quantify -- accomplishments. First, it taught team members to be problem-solvers. Second, it forced them to learn group process skills if they did not already have them. The process of working through a technology problem with the support of their liaison taught them more about the subtle characteristics of the issue than the adoption of a pre-specified proven practice ever could have. The experience of learning to work together as a group, of facing challenges, achieving success, and learning from failure left LPT members in an excellent position to go on tackling difficult technology issues, regardless of the outcome of a particular effort. It was their personal growth in knowlege and skills which appeared to be responsible for project participants' overwhelmingly positive evaluation of the project, more than the number of measurable changes in technology practices in their districts.

The evidence of personal growth supports and validates NAPSET's underlying strategy of building local capacity through the accomplishment of concrete goals. While concrete measurable changes in practice are the project's ultimate goal, NAPSET participants who have gone through the planning process are likely to be in a better position to make these changes long beyond the termination of NAPSET involvement in their district.

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APPENDIX A: Issues Guide

ISSUES GUIDE FOR NAPSET TECHNICAL ASSISTERS & CASE STUDY WRITERS

I. ORGANIZATIONAL CONTEXT

A. School District Structure

*How many students in the district?

*How many teachers?

What is the administrative structure of the district?

Is there anything unusual about the administrative structure? power struggles? control issues? any unusual arrangements with other districts? (e.g., tuition paid to another district to take students for whom they have a special program?)

Has the district received any state funds or been otherwise involved with the state department of education lately?

Does the district have any overarching prior educational agenda -- curricula reform imposed from outside the district or educational goals set by the school board itself for example?

B. SPED Program Structure

*How many SPED students are there in the district?

*How many SPED teachers are there?

*How many SPED aides?

*How are SPED services organized in the district?

*What kind of special learning environments are provided within the district?

*What kinds of out-of-district or regional program are special students placed in?

*Is the district a member of an IEU or a special ed collaborative? If so, what services are provided?

How are the SPED programs supported?

-- where in the budget do the SPED funds come from?

-- who makes SPED budget decisions?

-- are there any special program funds or resources? donated microcomputers for example?

C. SPED Status Within the District

How do the SPED programs fit into the overall school structure?

Who is the ranking SPED administrator?

What is his/her position in the administrative hierarchy?

Is he/she a good advocate for the programs?

What kind of support do the SPED programs get from the administration?

What is the overall status of SPED programs in the district? Are they considered important? successful? Or are they disregarded in general? Why?

Is there good communication and rapport between SPED teachers and regular education teachers? principals? administrators? Why or why not?

Can the SPED programs count on continued financial support to maintain the tech systems they may have already set up? or will set up?

D. District's Experience with Innovation and Change

Has the district applied for and/or received any kind of grant for special projects? What were they; when were they; how much money was received?

What is the prevailing attitude toward innovation in the district?

Is the administration supportive of new ideas in concrete ways? i.e., does it provide release time for workshops and trainings; organize and/or support inservice training for education innovations?

Has the district had success in implementing innovations?
Is there any systematic procedure for planning for, implementing, monitoring, supporting, and evaluating innovations?

Is there a recognizable change facilitator in the district?

Is there any recognizable inhibitor of change? Someone or something who acts as monkeywrench in any change effort?

II. TECHNOLOGICAL INNOVATIONS

A. Technology in Regular Education Curricula

*To what extent has the district incorporated technology into its mainstream curricula?

*Is there a group charged with developing the use of technology in the district? What is the composition of this team?

*What kind of plans, programs, procedures has it set up?

*What kinds of in-service training workshops exist for teachers in technology and computer use?

Which kids get access to microcomputers, how, and when?

Do SPED kids miss out on any basic microcomputer instruction by virtue of spending time in SPED classrooms?

B. Technology in SPED Curricula

*To what extent has the district incorporated technology into its SPED curricula?

*Are SPED concerns incorporated into the planning team's agenda? or is there a separate team for planning the use of technology in SPED?

-- how many microcomputers do SPED programs have access to?

-- where are they located?

-- who uses them and how are they used?

-- what other technology have the SPED programs made use of?

-- how are technology-related purchasing decisions made?

What is the extent of technology knowledge and expertise among the district staff?

Is this knowledge the outcome of personal interest or district efforts to educate its staff in the use of technology education?

Have SPED staff acquired any special knowledge or expertise in technology by dealing with the particular needs of special students?

C. Administrative Applications of Advanced Technology

*To what extent has the district used advanced technology for administrative purposes? in SPED?

Who were the initiators of these (and any other) innovations?

How have these been received?

III. PROFILES OF KEY PEOPLE: ATTITUDES, CHARACTERISTICS, ROLES, BEHAVIORS, GOALS OF THE FOLLOWING PEOPLE TOWARD TECHNICAL INNOVATION, SPED, AND TA IN SPED:

SPED staff
Regular ed staff
Administrators
Parents and community
Technical assistors within the district.

IV. BASIC DEMOGRAPHIC AND SOCIOLOGICAL PARAMETERS

*How would you characterize the district economically?

*What is the employment mix in the district -- industrial, agricultural, professional, service, hi-tech, etc?

Unemployment?

What are the major industries /employers in the area

(Are there any computer-related industries who support could be solicited for implementing technology in the district's schools?)

What are the noteworthy demographic statistics and/or changes in the area -- significant ethnic or cultural sub-populations, major recent in- or out-migration, new industries or recent plant-closings, etc.?

What is the general political outlook of the area? Are these opposing political factions in the district?

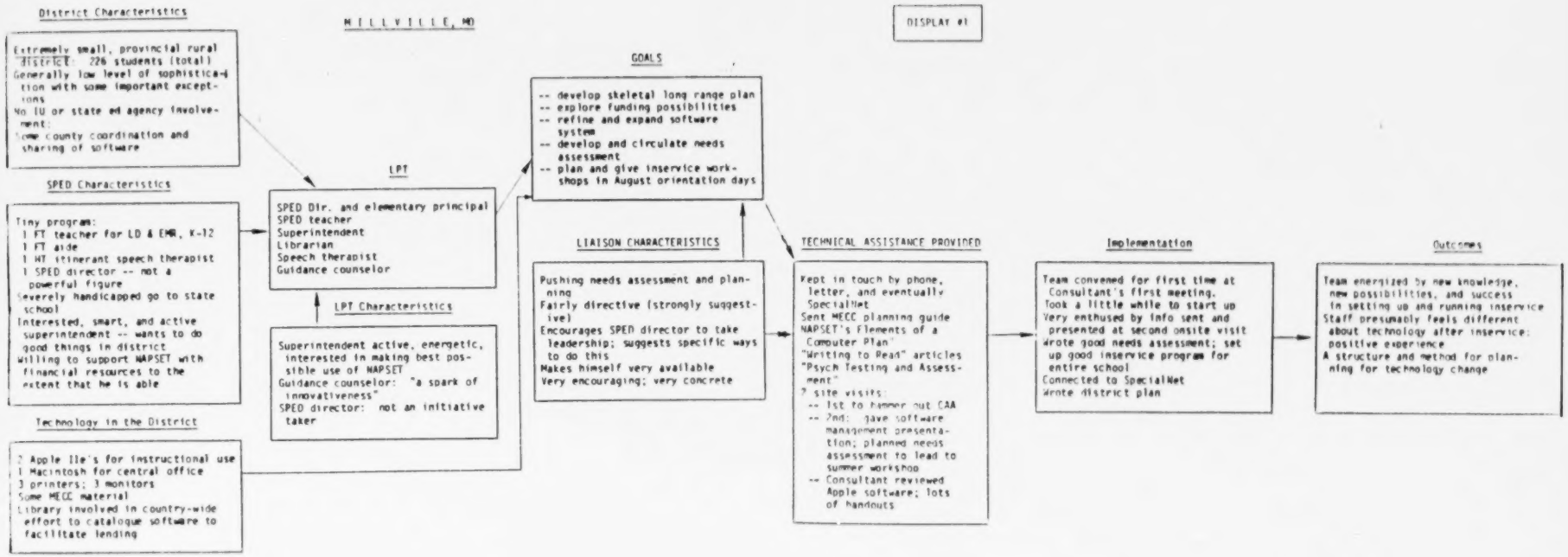
What is the general educational outlook of the district -- progressive, innovative, conservative, etc.?

Where does the district's education money come from -- state and/or local taxes? Does the state support education in general? Where does the local tax money come from (income tax, property tax, etc.)?

Realistically, what kind of money does the district have to spend?

* Starred questions should be answered first

APPENDIX B: Data Analysis Displays


District Characteristics
MILLVILLE, MO
DISPLAY #1
Extremely small, provincial rural district: 226 students (total)
Generally low level of sophistication with some important exceptions
No IU or state ed agency involvement:
Some county coordination and sharing of software
GOALS
-- develop skeletal long range plan
-- explore funding possibilities
-- refine and expand software system
-- develop and circulate needs assessment
-- plan and give inservice workshops in August orientation days
SPED Characteristics
LPT
Tiny program:
1 FT teacher for LD & EMR, K-12
1 FT aide
1 HT itinerant speech therapist
1 SPED director -- not a powerful figure
Severely handicapped go to state school
Interested, smart, and active superintendent -- wants to do good things in district
Willing to support NAPSET with financial resources to the extent that he is able
SPED Dir. and elementary principal
SPED teacher
Superintendent
Librarian
Speech therapist
Guidance counselor
LPT Characteristics
Superintendent active, energetic, interested in making best possible use of NAPSET
Guidance counselor: "a spark of innovativeness"
SPED director: not an initiative taker
LIAISON CHARACTERISTICS
Pushing needs assessment and planning
Fairly directive (strongly suggestive)
Encourages SPED director to take leadership; suggests specific ways to do this
Makes himself very available
Very encouraging; very concrete
TECHNICAL ASSISTANCE PROVIDED
Kept in touch by phone, letter, and eventually SpecialNet
Sent MECC planning guide
NAPSET's Elements of a Computer Plan"
"Writing to Read" articles
"Psych Testing and Assessment"
2 site visits:
-- 1st to hammer out CAA
-- 2nd: gave software management presentation; planned needs assessment to lead to summer workshop
-- Consultant reviewed Apple software; lots of handouts
Implementation
Team convened for first time at Consultant's first meeting.
Took a little while to start up
Very enthused by info sent and presented at second onsite visit
Wrote good needs assessment; set up good inservice program for entire school
Connected to SpecialNet
Wrote district plan
Outcomes
Team energized by new knowledge, new possibilities, and success in setting up and running inservice
Staff presumably feels different about technology after inservice: positive experience
A structure and method for planning for technology change
Technology in the District
2 Apple IIe's for instructional use
1 Macintosh for central office
3 printers; 3 monitors
Some MECC material
Library involved in country-wide effort to catalogue software to facilitate lending

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Display #7

SITE	DISTRICT READINESS FOR SPED TECHNOLOGY: General Tech Knowledge	Resources	Available Time	Motivation Overall	Motivation Leader	LEADERSHIP: O, L, M, H	TEAM SKILLS: Technology Experience	SPED Experience	Admin Experience	Classroom Experience	EFFECTIVENESS: O, L, M, H	GOALS	ACTIVITIES	TECHNICAL ASSISTANCE	NATURE OF OUTCOMES	
														catalyst process helper information provider resource linker solution given:directive evaluator	process product knowledge/skills change in practice	General Outcome O, L, M, H
Franklin	H	H	H	H	H	M	H	H	H	L/M	H	M	1. Develop district goal for technology in SPED; tie these into the district computer committee's work; coordinate activities of disability interest group. 2. Plan and give workshops in four identified need areas, to teachers and parents. 3. Research parent needs re technology; develop activities to meet these needs.	1.a. wrote and administered teacher needs assessment survey b. developed plan to institutionalize technology in SPED curriculum, including philosophy, statement, goals, component checklist c. development of software lists; review of software d. formulation of user interest groups e. publication of SPED tech newsletter f. concerted effort to seek out and apply for technology funding g. development of a custom IEP program 2.a. Planned and delivered over 35 workshops during inservice and afterhours time b. formulation of needs assessment instrument to plan new workshops 3. Offered a series of workshops for parents on tech in SPED	1.a. catalyst b. process helper, info provider, resource linker c. (outcome) d. info provider, resource linker e. helper f. helper g. catalyst, process helper h. process helper, info provider, resource linker, evaluator i. info provider 2. process helper; info provider 3. process helper	1. process, products, knowledge/skills; change in practices (institutionalization of plan [IEP written] 2. process; knowledge and skills 3. process; knowledge and skills General Outcome	H H H H
												Ambitious	Used all release time	two 2-day visits Process and information		
Millville	M	L	M	M	L	L-M	L	M	M	L	M	M	1. Develop skeletal long-range plan 2. Explore fundings possibilities 3. Refine and expand software system 4. Develop and circulate needs assessment 5. Plan and give inservice workshops	1. Developed an outline; never wrote formal draft 2. Explored available local and state funds 3. workshop on software management systems and basic ed. software programs 4. wrote good needs assessment; service day 5.a. Planned entire school inservice day b. Gave inservice day	1. Catalyst; directive; process helper 2. Catalyst 3. Info provider; resource linker; process helper 4. Process helper; info provider 5. Catalyst	1. Process 2. Knowledge and skills 3. Knowledge/skills 4. Product 5. Knowledge/skills General Outcome	L M H M H M
												Average	Used all release time	two 1-day visits Directive process helper and info provider		

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SITE	DISTRICT READINESS FOR SPED TECHNOLOGY					LEADERSHIP		TEAM SKILLS				EFFECTIVENESS	GOALS	ACTIVITIES	TECHNICAL ASSISTANCE	NATURE OF OUTCOMES	
	General Tech Knowledge	Resources Available Time	Motivation Overall	Motivation Leader	O, L, M, H	Technology Experience	SPED Experience	Admin. Experience	Experience	Classroom Experience	O, L, M, H				catalyst process helper information provider resource linker solution given:directive evaluator	process product knowledge/skills change in practice	General Outcome O, L, M, H
Northboro	L	M	M	L	L	L	L	M	M	L	M	L	1. Needs conduct assessments for developing training plan 2. Review district computer plan and make recommendations relating to SPED 3. Design software acquisition system	1.a. conducted teacher survey b. developed a series of in-service workshops to train teachers c. computer coordinator gave introductory computer workshop for teachers d. Software review by vendor at high school e. Meeting with consultant to discuss technology and management issue 2. not done 3. not done (4.)* Two teachers came to NETWORK for demonstration of speech synthesizer (5.)* Two teachers came to NETWORK to test software for a blind student *Individual consultation not included in CAA	1.a. process helper, catalyst b. process helper, catalyst c. catalyst d. catalyst e. resource linker, info provider 2. Process helper 3. Process helper (4.) Info provider (5.) Info provider, resource connector 4 1/2 day mtgs. at The NETWORK 7 1/2 day mtgs. at N. Andover	1. Product, process, some knowledge and skills 2. 3. (4.) Knowledge skills (5.) Change in practice General Outcome	L/M 0 0 M L
													Average	Didn't use all release time	Process and Info		
Oxford	M/H	H	M	M	L	L-M	M	H	L	H	H-H		1. Develop goals and objectives for use of tech in SPED 2. Do software training with aim of matching software with existing instructional objectives 3. Develop a software review and acquisition system which includes identification, review, selection, purchase, and distribution of software for SPED	1.a. Did a cosmic planning workshop with DSR; decided upon target areas for the plan, and came up with schedule to complete it next year. b. Did one half day software evaluation workshop and hands on software review workshops 2.a. Did one half day software evaluation workshop and hands-on software review workshops. b. Did PFS:File training workshop; discussed possible use	1.a. Info provider and process helper b. Process helper and evaluator 2.a. Info provider/resource linker, process helper b. info provider; process helper 3.a. Catalyst, information provider and process helper b. catalyst Four 1-day visits	1. Process 2. Knowledge and skills/process 3. Knowledge and skills/product; in practice General Outcome	M M H H
													Average	Used all release time	Process and Information		

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Display #3

SITES	SPED LEVEL OF USE OF TECHNOLOY	Time/Money District Commitment DISTRICT READINESS TO MAKE CHANGE	TEAM EFFECTIVENESS	LEADERSHIP (motivation and skills)	DAYS ON SITE/ FREQUENCY OF TEAM MEETINGS	GOALS	OUTCOMES (1-5 scale)
JASPAR	Preparation/ Mechanical	H	H	H	4 (shared w/Redcliff) Team met weekly	1. Assistance in setting up and operating telecommunications systems 2. Development and expansion of record-keeping system 3. Gather information about use of technology in vocational education for SPED students 4. Write planning document	1. Set up system (dev. of adm. applications) 2. Recordkeeping system in use -- dev. of admin. application 3. Linked to other districts working on this; team developed knowledge 4. Developed curriculum focused plan which deals with management, instruction, training, equipment issues/dev. of team process skills) Team (entire SPED staff) excited, functioning well, dev. process skills, and created "exemplary plan" OUTCOMES: 5
MOLINA	Orientation/ Preparation (Some greater use in PH program)	L+	L - M+	M/H (when functioning; absent for several months (facilitative and managerial)	2 1/2 every 2-3 weeks, except during 3 months when coordinator was absent	1. Develop long range plan for technology in SPED 1.a. Revised goal: run Pilot Test focusing on WP with LD kids 2. Plan and offer inservices for physically handicapped staff 3. Develop software library	1. Developed plan for Pilot Test, acquired equipment, got Board approval (instructional applications) 2. Team emerged as cohesive unit; please with success, sense of accomplishment, and continuing into a into second year (dev. of team process skills) OUTCOMES: 4
MILLVILLE	Preparation (Some minimal use)	M	M	M	2 1/2 (+ 1 day with consultant) 4-5 times during the year: not often	1. develop skeletal long range plan 2. explore funding possibilities 3. refine and expand software system 4. develop and articulate needs assessment 5. plan and give inservice workshops in August	1. Development of k/s among staff thru good needs assessment and planned training 2. Develop software management system at regional level (not fully implemented) -- k/s of team conc. software and software management improved Team skills more developed; excited by new knowledge and success OUTCOMES: 3
REDCLIFF	Preparation/ Mechanical (instruction) Mechanical/ Routine (administration)	L+	M	M	4 (shared with Jasper) 10 times: once a month	1. Assistance in setting up and operating telecommunication system 2. Simplify record keeping system 3. Gather information on using technology in voc ed for SPED 4. Develop written implementation plan	1. & 2. Develop administrative applications quite successfully 3. Wrote skeletal program (dev. k/s with reg to to process/planning) Team never enthusiastic, most of work done by coordinator; plans to work cooperatively with Jasper in second year. OUTCOMES: 3

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National Assistance Project for Special Education Technology

FINAL REPORT

Part III: Case Studies and Vignettes

September, 1986

The NETWORK Inc.

ANDOVER, MASSACHUSETTS

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FINAL REPORT

PART III: CASE STUDIES AND VIGNETTES

The National Assistance Project for
Special Education Technology

Michael Mayo, Project Director
Lindsay French
Karen Kahn
Susan Loucks-Horsley

Submitted by

The NETWORK, Inc.
Contract #300-83-0258
September, 1986

This document constitutes Part III of the Final Report for the National Assistance Project for Special Education Technology (NAPSET), conducted by The NETWORK, Inc., through the support of the U.S. Department of Education, Special Education Programs, Technology and Marketing Branch.

James Johnson, Chief
Jane Hauser, Project Officer

The complete report is structured in three sections; Part I, Project Description; Part II, Evaluation; and Part III, Case Studies. Copies of each section of this report, as well as a summary, are available at cost through:

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To assure anonymity, the names of school districts, other agencies, and individuals participating in the project have been fictionalized in this report.

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NAPSET CASE STUDY: CONCORDIA COUNTY SCHOOL DISTRICT

District Context

External Factors

Concordia County School District (CCSD), located in the southeastern part of the country, encompasses a large and diverse geographic area. It is 100 miles long, 40 miles wide, and includes isolated rural island communities where witchcraft and voodoo are still part of everyday life as well as the historic and cosmopolitan port city of Concordia itself. Concordia County combines high tech industry and affluent white suburbs with backwoods dirt farming and shrimp fishing on the Concordia River. With its mixture of urban, suburban and very rural schools, CCSD is challenged with a wide range of educational and administrative issues.

The overall student population in the district is 55% minority (mostly Black) and 45% white. But the ethnic populations are distributed unequally throughout the district so that 95% of the central city schools are Black, with similar percentages in some rural areas as well. District enrollment figures do not accurately reflect the ethnic composition of the county, however, as 5-6,000 students (1/8 of the district enrollment) are enrolled in private or parochial schools, and most of these students are white. In Concordia County it is an indication of status to send one's child to private school if one is white, so most who can afford to, do so. There are many small religious schools throughout the county which serve less affluent white families also. In predominantly Black rural areas the few white families often choose to send their children to small parochial schools rather than to public schools in which they would be in the minority.

The high percentage of rural and minority students in Concordia County means that the district receives a considerable amount of Chapter I aid from Washington. The state also provides one penny for every dollar out of its 5% sales tax for compensatory education. Although in theory this money is to be used exclusively for remedial and compensatory programs, both special ed and compensatory ed are part of the Department of Pupil Personnel Services. The same person often administers both programs in the schools, and special ed frequently benefits indirectly from this funding.

As the figures for private school enrollment indicate, it is not a "classy" thing to be involved with the public schools. Over the years the school board has tended to be extremely conservative, choosing to keep school costs down as its number one priority. Last year, for example, music and art were classified as "frills" and were cut from the district curriculum. The county has a strong basic skills orientation and district expenditures are evaluated in terms of their effect on overall

test scores. From this perspective special education is nothing but a budget drain. The school board and the community in general has an unenlightened attitude toward special education, one local planning team member explained. People have the idea that special ed students are hopeless cases, she said. They think of special ed as a low budget maintenance program. People need to be shown that money spent now on the education and training of handicapped kids will save money in the future in unemployment and public assistance. This attitude toward special needs students is not prevalent in the district at the moment, however.

The state, in general, tends to have a conservative influence on local education. Last year, for example, the state education package mandated attendance and teacher accountability standards for all school districts. In fact, CCSD had already established its own accountability standards. It is considered an "innovator" in the area of accountability and was cited in 1983 as having one of the ten best teacher accountability programs in the country by President Reagan's Department of Education. The state Department of Education has sponsored some advanced technology training programs, however, and last year mandated a 16.5% raise for all the teachers in the state, recognizing that local school districts were not compensating them adequately. Department of Education officials have been described as concerned about the state of public education in the state, but they generally choose the more conservative measures to address their concerns.

One final external factor of significance for CCSD is the presence of two military bases within its boundaries. There are, in general, good relations between the Navy, the Air Force, and the county, but the bases place an extra burden on the school system and impact the special ed programs directly.

Some time ago CCSD gained a reputation in the military for providing a couple of good special ed programs. The reputation spread to encompass all of special education, and Concordia became known as the place to be stationed if you had a child with any handicap or learning disability. Special ed teachers talk about "messed up military kids" and can document a 40% annual turnover of kids enrolled in special education programs, much of which they attribute to the transiency of the military families.

Internal Factors

CCSD has approximately 44,000 students enrolled in 41 elementary, 15 middle junior high, and 11 high schools. The district employs 2,300 teachers, 525 aides, and approximately 400 certified administrative staff. CCSD is divided into six sub-district administrative areas, each with its own area superintendent and school board responsible for hiring teachers and placing students. There is one district superintendent and a district school board which oversees the system as a whole, making broad policy decisions but leaving many operating questions up to the area boards. The district superintendent has four central office deputies in charge of the Divisions of Administration, Operations,

Personnel, and Curriculum and Instruction, for the entire district. Special education falls into the Division of Curriculum and Instruction, within the Department of Pupil Personnel Services.

Special Education Program

Approximately 12.5% of the total enrollment, or 5,500 students, are considered special needs students. The district provides itinerant services, resource rooms, and self-contained classrooms for educable mentally handicapped (EMH), trainable mentally handicapped (TMH), profoundly mentally handicapped (PMH), emotionally handicapped (EH), learning disabled (LD), visually handicapped (VH), hearing handicapped (HH), orthopedically handicapped (OH), and speech handicapped (SH) students. EMH, LD and EH students attend classes in their own school or sub-district area; low incidence populations are clustered in classrooms which serve up to four counties.

Each school building has a team of Pupil Personnel staff including a psychologist, a special ed consultant, a nurse, a speech therapist, and an attendance worker who have offices in the school and together determine placement decisions for special and compensatory programs. Team members work under a supervisor in Pupil Personnel, and one team member is designated as liaison between the school and the central office staff. As a group they must answer to the principal of the school in which they work -- it is a decentralized, school-based model of service provision.

This school-based service model for special and compensatory ed is a new innovation in the district. It is part of an overall shift toward a school-based management system, in which building principals are given much greater control than they previously had over what goes on in their schools. Principals now make almost all policy and budget allocation decisions for their buildings, work with department heads to identify and address local needs and issues, and oversee the pupil personnel team which works from the building rather than out of a central district office.

School-based management was instituted two years ago at the recommendation of the district superintendent; Pupil Personnel Services were reorganized at that time as well. Previously there had been one district coordinator for special education, and other coordinators for psych services, speech, health, guidance, etc. Special ed classes around the district operated out of the central office, with exceptionality consultants to oversee their own programs in all the district schools. Now building principals have final say about the programs in their schools. Less is dictated by the central office and team members must work within the structures of their buildings. Instead of one district coordinator for special ed, there are now four coordinators with specialized responsibilities: one to whom representatives of all the school-based teams report, one in charge of low incidence populations outside the purview of the school teams, one in charge of all the paperwork for special ed programs (federal reports and audits, legal issues, advanced casework, etc.) and one crisis management coordinator.

Tne reorganization of Pupil Personnel Services, while it dovetailed neatly with the switch to school-based management throughout the district, was orchestrated by Daniel Bones, Deputy Superintendent of Curriculum and Instruction, for reasons of his own. Dan Bones is the immediate supervisor of the director of Pupil Personnel. He is quoted as saying that before the reorganization, CCSD was operating two entirely separate programs -- one for regular ed and one for special ed. In general regular ed teachers and administrators were not well aware of the unique problems facing special students. There was a communications gap between the two groups of educators at both an individual and a programmatic level, and resentment toward the "outside experts" who came in from the central office to tell building staff what to do with their students. Bones wanted to improve communication between regular ed and special ed staff, and integrate the two programs more fully in the schools. The school-based Pupil Personnel teams were an attempt to address these issues.

They were also an attempt to provide more instructional assistance to special ed teachers. He felt the special ed department was getting too caught up in its administrative problems -- getting an accurate count of special students, working out transportation tangles, settling court cases -- and was not paying enough attention to what was happening in classrooms. This was corroborated by the Director of Pupil Personnel: "We haven't given teachers much help with curriculum and instruction up to now." Bones hoped to address this issue through the school-based teams.

Support for Special Education

The interest that Bones has taken in special education contrasts with the district superintendent and school board's lack of concern. In general, special education has been given short shrift in the district. They are expensive programs and as far as the school board is concerned, they give no return on the investment. In a "poor" district (CCSD assesses itself very little for public education) special ed is especially crippled. The district superintendent understands neither the real cost of the programs nor where the dollars come from to fund them. He was under the impression that 94-142 paid for almost everything in special ed; consequently, he cut teacher salaries when 94-142 money became available. (In fact, only 2% of the SPED budget comes from the federal government, 18% comes from local school assessments, and 80% comes from state allocations.) Currently 90% of the special ed budget is spent on salaries. There is virtually nothing left over for equipment and special curriculum needs. In fact, money is taken from other parts of the budget to cover special ed costs because total allocations are simply insufficient.

Special ed programs lose out in other ways, in addition to low budget allocations. For example, this year computer-based management of basic skills instruction was introduced district-wide as part of the teacher accountability program. Each school received one Apple IIe, with 2 disc drives, a printer, and

a card reader. Goals and objectives in basic skills at all grade levels were put on disc and teachers were then taught to document each student's mastery or non-mastery of these on the Apple. This is the beginning of a five-year effort to introduce computer managed instruction into most areas of the district's curriculum. The district computer coordinator is in the midst of a massive training effort to teach teachers how to use the system.

Because SPED students often have different goals and objectives from regular students, SPED teachers were left out of this training effort entirely, in spite of the fact that an introduction to the Apple and to this type of program would have been very useful to them. There was a definite feeling among members of the LPT that as SPED teachers they were discriminated against; that their kids could not benefit from what the regular students got. There was an attitude among the SPED people that they had to fight for every penny they got.

Technology in the District

Prior to 1982 CCSD had acquired an assortment of printer terminals and microcomputers for use in selected district programs, primarily Chapter I remediation and business courses. In early 1982 the district superintendent formed a committee of instructional directors and area superintendents to come up with recommendations for the use of new Chapter II block grant money. The committee's major recommendation was to purchase microcomputers to manage and reduce the recordkeeping burden of the district's basic skills acquisition program (BSAP). A three-year acquisition plan was adopted, at the end of which each school was to have the hardware and software needed to manage and report on core reading and math curricula. The curriculum objectives were computerized and an instructional management system was developed to facilitate the scoring of tests, updating of student records, correlation of materials to non-mastered objectives, and reporting of skill mastery and non-mastery. In February 1983, the district hired a full-time computer consultant to assist in providing training and inservice in the use of the new CMI system.

Later that spring Dan Bones appointed a committee to plan, coordinate, and implement all computer-related activities for the Division of Curriculum and Instruction. This committee:

- inventoried all microcomputers in the CCSD schools;
- constructed a scope and sequence chart showing the existing computer programs in the district;
- developed the recommendations for, then wrote, a five-year plan for computer use in instruction, instructional management, and administration in the district;
- continued to meet regularly to review and update the five-year plan.

The main points of this extensive plan were:

- to use Chapter II block grant funds to purchase one microcomputer and necessary peripherals for each school in the district over a 3-year period, to be used to track students' progress toward meeting district objectives in the basic skills areas of language arts and math;
- to develop an instructional management system for the basic skills objectives;
- to purchase modems to enable micros to communicate with the district mainframe, for centralized reporting of basic skills scores;
- to increase number of micros for instructional uses to 1/60 students by the end of the five-year period;
- to install computer labs in all non-Chapter I schools (since all Chapter I schools had labs already);
- to provide software and necessary maintenance for equipment; and
- to provide systematic and timely staff training.

In November 1984 a full-time computer coordinator of curriculum and programming
was hired to implement this plan.

Two special ed staff who ended up on the NAPSET local planning team worked on the development of the district plan. In spite of their presence, the plan does not specifically address special ed needs and concerns as they relate to technology. Special ed was included in the list of programs slated to use microcomputers for remediation (in high school) and computer assisted instruction (in middle schools); beyond this the plan had little to offer the special ed department.

When NAPSET staff arrived for the first site visit to CCSD in January 1985, Donald Stitt, the computer coordinator, had been at his job only two months. He was struggling to keep on top of responsibilities which seemed at times to be overwhelming him. Among other things, he was setting up a system of basic skills CMI district-wide with only one micro per school to work with. The district had been ambitious with its plan but had not thought through the work involved in implementing it very carefully. A great deal of training was called for and district teachers were, for the most part, beginners when it came to microcomputers. The amount of training that one man could do in 56 separate schools was small in relation to what needed to be done.

Donald's job was complicated by the fact that he could not set up an overall, district-wide training program because each principal had the final say about how training would be accomplished in

his/her school. Donald could provide advice and assistance but he could not require anything. He trained one teacher and the principal from each school, then it was up to them to set up their own training programs back in their own schools. Thus, while the district was struggling hard to become "computerized" in this one area of basic skills, at the beginning of 1985 the program was still in a state of confusion.

Because the curriculum objectives for special ed students were different from the standard district objectives for basic skills, special ed had no part of this district-wide CMI system. What technology was in use in special ed existed independently of any district effort.

When the NAPSET project got started in CCSD, a database management system was in place to handle statistical reporting for special ed throughout the district. It contains basic information on all special ed students and is used to generate class rolls and information for state and federal reports, track dates for student evaluations and periodic reviews, etc. Data are entered on terminals at the schools and stored on the district mainframe. (This system, we learned, was not very up-to-date, but it was not a problem which the NAPSET team dealt with.) The special ed district office had a TRS-80 and an ADDS terminal which linked to the mainframe; also a 700 T.I. terminal used for SpecialNet.

Although there were computer labs in several junior high and high schools already, these were open for use by special ed classes by special arrangement only. There was no advanced technology in use in any special ed classrooms with the exception of the low incidence hearing and visually impaired classes. These micros and adaptive devices had been purchased with donated money or funds received through special grants. There was no instructional equipment provided through the district.

Several special ed teachers and administrators had recognized the great potential for using microcomputers for both instructional and administrative purposes in their programs however. For example, Eleanor Maines, District Consultant for EH programs and a member of the NAPSET local planning team, was responsible for setting up the special ed database management system. She belonged to the local chapter of the Council on Exceptional Children, had been to several educational technology conventions, and attended a state Department of Education training program in which she and a district teacher were introduced to various applications for technology in special ed classrooms. The two of them then returned to Concordia to teach a workshop to district special ed teachers on what they had learned. These teachers in turn became convinced of the great instructional potential for microcomputers in special ed.

Eleanor also realized that since special ed goals and objectives were already outlined it would be a simple matter to put them on disc and computerize the entire IEP process. She came to the first NAPSET meeting anxious to explore different IEP systems.

Eleanor saw two main obstacles standing in the way of computer use in special ed. First, she felt that the upper levels of administration had to be made more aware of the needs of special students and convinced to make a financial commitment to special ed technology, since the department itself had no money to spend. Second, special education teachers had to be shown how both they and their students could benefit from using microcomputers, to create a greater demand for them. Both of these were issues the NAPSET team ultimately addressed.

Innovation in the District

CCSD was in a state of transition in many areas when the NAPSET liaison arrived on the scene in Concordia. The changeover from a centrally managed district to a decentralized school-based management system was having significant impact on the district. The plan had been developed by the superintendent and his deputies; while it was too soon to say whether or not it was truly successful, it seemed to be changing the relationship between principals and their staff and central office staff and the schools. The concurrent reorganization of the special ed department was a part of this whole change. Special ed staff were being forced to deal more directly with regular ed teachers and administrators. This created strains but also provided opportunities for better communication between special ed and regular ed teachers, which many appeared to be taking advantage of.

CCSD seemed to be in the midst of a self-improvement campaign at the same time. In addition to school-based management, it had begun a Program for Effective Teaching (referred to as "PET") which every teacher and administrator had to go through at some point during the year. PET was an effort to revitalize teaching in the district: every afternoon after school for two weeks teachers and administrators went through a series of workshops aimed at improving their performance in the schools. Everyone grumbled about having to go through "PET"; it was not yet clear whether the program had an appreciable effect on performance.

Both of the above mentioned "innovations" were initiated in the upper levels of the administration; we heard of no examples of grass-roots initiated change. However, at least one member of the LPT saw this period of transition as a great opportunity for the NAPSET project. She felt so many things were changing at the district at this time that if the local planning team could come up with some good plans, changes would be easier to implement, since one more change would not make a lot of difference at this point. Another person believed that the newly hired computer coordinator, whose roles and responsibilities were still in the process of being established, could be recruited to the cause of special ed technology, and targeted him as someone whose support it would be important for the team to win.

NAPSET Technical Assistance

Chronology of Significant Events

October 14-16: Orientation Meeting, Danvers

late November/early December: Liaison makes phone calls to Concordia to get an update on district activities and the make-up of the LPT, and to make arrangements for first on-site visit. Case study researcher does the same.

early January: Liaison reschedules visit for late January.

January 28: Case study researcher spends the day interviewing LPT members and visiting district schools.

January 29: First on-site visit. Liaison gives overview of the project; LPT discusses possible goals and objectives, and decides on three need areas for the CAA. Case study researcher present at this meeting.

February 19: Liaison sends final draft of CAA to Concordia; sends material from information resource center in response to LPT member's information requests; drafts and sends a needs assessment survey to be distributed to special ed teachers in the district.

March 18: Liaison discusses IEP programs with LPT member; suggests possible programs for Concordia and other school districts to call. Arranges for a consultation with NAPSET's IEP consultant.

March 23: Second on-site visit. Liaison gives technology slide show at a half-day technology mini-fair which LPT has organized; evaluates the rest of the presentations; meets with LPT in the afternoon to debrief mini-fair, and discuss how to expand it into a summer workshop and fall sequel.

April 19: Liaison discusses how to build community support and raise money for special ed programs on phone with LPT member; gathers information from info resource center.

May 2: Third on-site visit. Liaison presents material on community fund- raising; discusses results of needs assessment survey; helps LPT prioritize short and long-range goals; discusses procedure for putting IEP format and goals on disc; discusses two-week summer workshop planned for July.

late May: Liaison sends more information on IEP packets.

August 28-30: Second Orientation Meeting, Boston.

LPT met every two to four weeks from January through May.

Local Planning Team

The Local Planning Team (LPT) was put together by Pauline Tilly, the former district coordinator for special education. Pauline came to the original orientation meeting in Danvers in 1984, but her job in Concordia had been peripheralized in the reorganization of the special education department and she left the district after convening the team only once. This left the LPT at a bit of a disadvantage, particularly as the Director of Pupil Personnel Services, Carol Allard, whom Pauline asked to take over leadership of the LPT, had no background in special education per se, and was new to her job and so very busy with other concerns. She proved to be an active and able leader but admitted that she felt quite confused and unclear about her responsibilities in the beginning.

Team members had been chosen carefully according to their organizational abilities as well as their areas of expertise and influence, so that in spite of a somewhat rocky beginning the team was functioning well as a unit by the end of their first meeting with the NAPSET liaison. The core of the team was comprised of special education administrators or district consultants for a variety of exceptionalities, plus one high school resource teacher who coordinated all compensatory and special ed programs in her building. There were no parents, no principals, no regular ed teachers. When asked why Pauline had chosen so many special education administrators, another LPT member explained that she felt these people had a better overall understanding of district issues, and that from experience they knew how to get things accomplished in the district. In fact, this was true: this core group, because they were familiar with each other and used to making and implementing district-wide decisions, worked together efficiently and productively. These people included:

Carol Allard - Director of Pupil Personnel Services and the new LPT Coordinator. A politically-minded administrator who was convinced early on of the importance of the LPT's work, and used her influence with higher-ups to benefit the team's efforts throughout the year.

Eleanor Maines - District Consultant for EH programs. Author of the original NAPSET application, responsible for setting up the special ed database management system for administrative uses, and an early advocate of technology in special ed. Actively pursued opportunities to learn more about technology before NAPSET came to CCSD.

Dorothy Ianella - in charge of curriculum and inservice in the Special Ed Department. Most interested in getting IEPs computerized; energetic and hardworking.

Nellie Griscomb - high school resource teacher; on the original computer curriculum committee Don Beers set up; came to the Danvers orientation meeting with Paula Thomas. Her apparently limitless energy and the force of her personality combined with her new interest in microcomputers made her a valuable team member.

Julie LaVerdiere - special ed consultant for low incidence populations; already using two microcomputers with adaptive devices in her program. Although she had a broad perspective on the issues she most often acted as an advocate for the needs of hearing and visually impaired students.

Kathleen Smith - special ed consultant, new to the district; without strong personal agendas; a good team member.

Other LPT members represented areas of concern or influence which Paula thought could benefit the LPT. These were:

Donald Stitt - computer coordinator for the district; responsible among a myriad of other things for updating the district's five-year plan every year with the computer curriculum committee.

Greg Austin - director of long-range planning in the district.

Richard Ames - in charge of the data processing department in the district's central business office. An expert on the business operations of the district mainframe.

These members were less likely to be at most LPT meetings but were called upon when their expertise or influence was needed. They were not present at the first team meeting when goals and objectives were discussed and the CAA hammered out.

David Zacchei (Zack) was the NAPSET liaison to CCSD. His impression after his first day in Concordia meeting with core members of the LPT was that he was working with a competent group of educators who could be counted on to judge for themselves what was the best way to make use of NAPSET in their district. He saw his role as that of a facilitator, helping team members to organize the ideas they already had and figure out the best way to reach goals which they could best determine. He trusted their judgments about their own district and did not feel the need to prove for himself that they were right. He trusted them to tell him if his suggestions were inappropriate for Concordia. This contrasts with his relationship with some of the other local planning teams which, in his mind, needed more of his guidance. He recognized in the CCSD LPT a group of people who had learned from experience the best way to get what they needed from a district and administration which gave nothing easily. His relationship with them throughout the year was more that of a consultant, an equal among equals, than that of an outside expert.

Zack got along very well with the Local Planning Team. They appreciated his low-key, informal assistance style, and respected his organizational skills and responsibility. They also recognized that he trusted their judgment about the district and appreciated the respect he demonstrated; they appreciated that he did not come on like a know-it-all. They were truly grateful for his assistance and the opportunities it afforded them to make changes.

Development of Cooperative Assistance Agreement (CAA)

The CAA finalized after the team's first meeting with Zack reflects a need discussed at length that day: to broaden the awareness of special ed teachers, the administrators who held their pursestrings, and the community at large of the great potential for using advanced technology with special needs students. Team members realized that they first had to raise their colleagues' level of awareness about technology to create a greater demand for microcomputers in their department. Accordingly, their first priority need area was to "develop a plan for getting teachers aware of and comfortable with microcomputers and software, first through a one-day 'mini-fair,' with the mini-fair to be expanded in the fall."

The second priority need area reflects their recognition that they could not count on their administration to fund all the technology they would like to be using. It took shape from a discussion about the need to raise the level of awareness in the business community about the productive potential of handicapped workers, and in general to create some positive P.R. about the accomplishments of special education. Team members noted that the district had had success in the past getting business sponsorship of various educational programs, and felt there was potential for success through this approach. The second priority need area reads, "explore strategies for increased local funding, especially from the private sector, for the purchase of hardware and software."

The third need area addresses a concrete innovation which the special ed department had already been investigating, could implement without alot of extra work, and would benefit all special ed teachers and their students: Zack would "provide consultation in the selection/implementation of a microcomputer-based IEP system."

On-site Visits

Zack visited Concordia three times between January and May. The first visit was taken up with an orientation of team members to the project and the development of the above three priority need areas. A date was set in March for a half-day mini-fair of technology awareness presentations (in which Zack would participate) to be given as an inservice to special ed teachers. Between January and March 22nd he:

- arranged for the NETWORK's IEP expert to provide IEP consultation by telephone and mail;
- sent information on software for visually impaired students, and systems for visually impaired students in use in the southeast;

- drafted an interest/needs assessment survey, and sent successful applications of technology to special ed to be used for P.R. and awareness building;

- sent examples of other mini-conference proceedings to use as guidelines for setting up one in Concordia.

On March 22nd Zack acted as "guest speaker," presenting a technology awareness talk/slide show as part of the mini-fair which the LPT had organized, and acting as an advisor/evaluator for the rest of the proceedings. The interest/needs survey was distributed at the mini-fair for teachers to complete. In the afternoon that day Zack met with the LPT to debrief the mini-fair, discuss how to expand it for the fall and develop a more extensive summer workshop, and set an agenda for the next meeting.

On May 1 Zack returned to Concordia for a final visit. He presented material about fundraising in the private sector for SPED needs, after which the committee discussed:

- long- and short-term goals of the LPT, which included helping teachers get access to microcomputer equipment in their schools, setting up a system for software review, targetting a group of schools for attention and praise for their use of technology in SPED, and teaming up with compensatory ed programs to make use of state money;

- the need to make specific special ed needs known to the computer coordinator, to be written into the update of the district's five-year plan;

- plans to use Apple Writer word processing software to computerize the special ed IEP format and district goals, and train teachers to use microcomputers to write their IEPs;

- plans for a two-week summer workshop in technology awareness and training for special education teachers.

The technical assistance which Zack provided throughout the year consisted primarily of information, contacts, and help with planning. The team itself did not need help with group process and was able for the most part to generate its own energy for action. A lot was accomplished in the district between Zack's visits -- he would provide some suggestions and places to go for information, then come back in six weeks to find a conference in action, a procedure for putting the district IEP onto disc, or detailed plans for a two-week technology workshop during the summer.

Implementation

The Concordia LPT for the most part worked very well together. Its members were thoughtful, organized, self-motivated and action-oriented. They needed no hand-holding. If they had any trouble working together it was because they were all used to being leaders of sorts and paid less attention to coordinating their activities with the others than they did to carrying out their own group-designated responsibilities. They met regularly -- every three weeks or so -- and made real progress on their projects between meetings. The district gave them no support beyond release time when Zack visited, although three or four of them were sent to out-of-state technology conferences, and some of the between-meeting-work was no doubt carried out "on company time." Although in some ways they did not need a leader at all, there was a need for overall coordination and direction setting in the group. Carol Allard emerged with some valuable leadership qualities to fill that need.

Carol had been thrust into the leadership position suddenly and was not overly enthusiastic about it in the beginning. In fact, she had expected to pass the job on to someone else as soon as Pauline Tilly's position was filled. But the position never was filled and Carol was won over to the team's cause. By the end of the first meeting with Zack she had rolled up her sleeves and gotten actively involved in the proceedings. Kitty always did her share of the "homework" and in fact used the extra clout of her position very effectively, letting the computer coordinator know she "expected special ed to be included in his plans and activities," for example, and lobbying for the support of her superiors in a way no other team member would have been able to. She took responsibility for the team but her leadership style was that of a coordinator rather than a director. She made it clear that she trusted the judgments of other team members, which enabled them to take more initiative and accomplish more than they would have if they had felt they had to get her approval of their every move. As head of Pupil Personnel Services her sanction of the team's activities and implicit trust in its members empowered the team and gave it a certain freedom of movement that not all other LPTs enjoyed.

Outcomes

Although the CAA was considered a working document and reviewed each time Zack visited, no formal changes were made in it over the course of the year, and all need areas were addressed at some level. If anything, Concordia moved beyond its CAA and accomplished more than it had originally projected.

With respect to need area #1, the team's informational mini-fair on special education technology was considered a success. Results of survey taken at the mini-fair showed little knowledge but a strong interest in learning more about technology among special ed teachers. This gave rise to a two-week summer workshop on technology for special education teachers as well as plans for an

expanded technology fair to be held this fall. Team members felt very good about the increase in technology awareness that had occurred among special education teachers over the course of the year. They also felt good about the increased awareness among regular ed teachers of special education's needs. Special education teachers had begun to talk more to their building administrators and other teachers about using building equipment for special education classes, and there seemed to be greater receptivity to this idea than there had been in the past. Carol admitted that improved communication within the school buildings was partly a result of the department reorganization which put special education teams into the buildings. Whatever the reasons for it, improved commmunication meant more special education teachers were likely to have greater access to existing district technology.

Exploration of strategies for increased local funding of special education technology was addressed primarily in the team's third meeting through a presentation and handouts offered by Zack. Although this area had not received a lot of attention over the year, it was still considered important by many team members and adopted as a priority for the coming year.

NAPSET had provided consultation in the selection and implementation of an IEP package, primarily through telephone conversations with the NETWORK's IEP expert. Dorothy Iannella had pursued this virtually single-handedly, then with the help of Don Stitt, had worked out a satisfactory format and hired a technician to put it and the district's special ed goals on disc. The LPT had made plans to train special education teachers in the use of a computerized IEP, and expected that they would change over to the computerized versions gradually over the next few years, as they got trained and recognized how much time it saved them. Dorothy had chosen to put the IEP on Apple Writer rather than a system which could be hooked into the mainframe for centralized reporting, because it was simpler and significantly cheaper. This was considered a temporary solution but one which made sense in the short run, to learn from as well as for financial reasons.

Because CCSD is a case study site it was automatically granted another year of NAPSET assistance. Much of Zack's third visit was spent reviewing this year's accomplishments and projecting goals for the next year. The need to develop concrete long-range plans for technology use in special ed was discussed at some length. This need had been discussed at the first meeting at the beginning of the year, but the team had decided to focus on IEP development instead, since it was a concrete goal that seemed attainable and there was energy to do it. Now team members had had some experience in implementing technology innovations and were in a better position to project realistic goals for the next five years.

It seemed to make sense to write special ed goals in a format that could be appended to the district's five-year technology plan. This plan had already been approved, and there was a procedure in place for updating it yearly which the LPT could work within. The

LPT could use the success of the past year to justify their goals, and take advantage of the fact that Donald Stitt, computer coordinator, was a nominal member of the LPT as well as a member of the computer coordinating committee, which is responsible for revising the plan. The LPT resolved to develop a document to submit to the district computer coordinating committee which outlined specific goals and objectives for special ed, and related them to the larger goals which the district had developed for technology use.

The team discussed other goals for the coming year, including setting up a software review procedure, helping teachers figure out ways to get more time on their building's computers, forging some alliance between compensatory ed and special ed concerning technology use, and increasing special ed visibility by targetting successful programs for attention. No final goals were set at this meeting, however.

Impact of the Project

What changes were made in CCSD in the first year as a result of the NAPSET project? There is now an IEP program available on disc for all special ed teachers to use. There is a much greater awareness of and interest in technology among special ed staff as a result of the training the LPT has sponsored. There is better communication between special ed and regular ed teachers in the district, although this is not an outcome of NAPSET alone. And there is an active and empowered team in place with bigger plans for special ed technology for the coming year. Before the first meeting with Zack one team member said she was looking forward to NAPSET creating an opportunity to make changes that the special ed department had not been able to make on its own. The Concordia LPT now seems to be in a position to plan and implement changes without any outside help.

The LPT has established valuable connections with Donald Stitt, district computer coordinator, and Patricia Spindler, the computer consultant. Donald and Patricia were actively involved in planning the summer workshops, and gave presentations at the mini-fair. They understand and have some allegiance now to the goals of the special ed department, which they never had before NAPSET arrived.

The Deputy Superintendent for Curriculum and Instruction is more aware of and sympathetic toward the needs of the special ed department also. While the LPT cites publicity as one of its goals for next year, in fact it has given itself a lot of coverage in the past year through its lobbying efforts and in its public events.

Factors Affecting Implementation

Clearly NAPSET was successful in Concordia. A great deal was accomplished in a short amount of time and more success is anticipated for the future. Several factors contributed to this success.

The make-up of the local planning team was key. Team members were doers: they were self-motivated, organized, and active people who knew how to get things done in their district. Several came to the team having either used or explored the possibilities for use of advanced technology in their work, so they were already several steps into the process. Moreover, most occupied mid-level positions in their department: they operated at the district level and had a district-wide persepective but also worked directly with classroom teachers, so they were in touch with the day-to-day problems of teaching special students. In a district the size of Concordia County people in these mid-level positions were ideal for a planning team of this kind: they had the organizational skills of administrators, but they were still in touch with the needs of the teachers and students who would be using technology.

Moreover, they proceeded with a fairly uniform perspective. They were able, for the most part, to agree on priorities for action, something many other teams struggled for a long time to arrive at.

The Concordia LPT did not look like the ideal LPT NAPSET had modelled for its sites. There was no parent present. ("If parent input made any difference in this district, we would still have music and art in the curriculum," one LPT member said.) There was only one classroom teacher and she had administrative responsibilities, and there were no regular education teachers or administrators except for the computer coordinator. Pauline Tilly had chosen this particular team because she thought they would be able to "get something done." She saw no point in including a classroom teacher who could not see beyond his or her immediate concerns, or a regular ed teacher who had no sense of special ed issues. As it turned out, her choices were excellent. These people not only shared a common perspective, they could lay out the steps to be taken to reach their goals.

The local coordinator, Carol Allard, was politically astute and used her influence to the great advantage of the LPT. In particular, she kept her immediate superior, Dan Bones, Deputy Superintendent for Curriculum and Instruction, appraised of the teams activity. Moreover, because she was director of Pupil Personnel Services and not just of special education, she had access to a larger piece of the total budget, and was able to "find" money to send LPT members to technology conferences (for example) or to hire a technician to transfer the district's IEP format onto disc. Her fiscal resources were extremely valuable to the team.

While the LPT was a smart and effective group of people, some credit for their success must go to the NAPSET liaison, David Zacchei. Several LPT members spoke with pleasure about working with Zack, and admired his facilitating skills. The LPT had worked hard on the NAPSET project, and Zack's involvement had clearly made the work more enjoyable for them. While some of what the team accomplished might have occurred in the district eventually without NAPSET, Zack's presence brought together a

group of people with the desire to bring technology to special ed and established a way to make things happen in the district, as well as making specific things happen. Eleanor Maines mentioned this specifically: she said, "We have a lot of ideas but no way to see them brought to fruition." Zack helped them create an effective team that was able to make things happen.

Other relevant factors include the fact that the district was going through many changes in other areas at the time of the NAPSET project -- the switch to school-based management, the reorganization of the special education department, the appearance of a great deal of new technology for other programs. Through the State Education Improvement Act, for example, one penny of the state sales tax was given to schools for compensatory education, and a lot of this money was used to purchase microcomputers. Firm plans for the use of this equipment did not exist in all cases. The LPT was often able to take advantage of slack in the system during this period: to arrange to use microcomputers that did not technically belong to them; to establish changes of procedure (for writing IEP's, for example) when a lot of other procedures were changing also.

Moreover, the goals the LPT set for itself at the beginning of the year were achievable. Rather than setting themselves up to fall short, they exceeded their expectations and went on to accomplish more than they had originally projected.

One factor which proved completely irrelevant to their success or failure was the conservatism of the school board and the district's overall lack of interest in special ed. Nothing the LPT did required school board approval, and the team generated positive PR through its own activities. It did not have a lot of money to spend, but was able to take advantage of miscellaneous existing funds -- 94-142 money was used to pay one teacher at the summer workshop, for example, and Donald Stitt was convinced to pay for the other out of his training budget -- so that funding approval never got in the way of their efforts. Now the LPT has established a good reputation in the district, and any future approval of LPT proposals -- for a special ed addendum to the district's five-year computer plan, for example -- should be a lot easier to gain.

The NAPSET technical assistance model worked well in Concordia. They had ideas; NAPSET helped them organize their ideas into a coherent plan of action. They had energy and initiative; NAPSET guided their energy, then made them stop and reflect on what they were doing from time to time. NAPSET had contacts and information resources; they know how to take advantage of them and did. In many ways Concordia was an ideal site: they were able to do all the things we had hoped sites would be able to do, so the help we could offer was useful to them. For those sites that could not for whatever reason take responsibility for the success or failure of their efforts, NAPSET could be of limited assistance.

Year Two Update

The second year of NAPSET assistance was a year of consolidation for the Concordia County LPT. The organizational groundwork laid down in the first year was put to solid use in the second. While some new ground was broken, much of the team's activity revolved around consolidating and institutionalizing efforts initiated in Year One.

Team coordinator Carol Allard was greatly energized by the second NAPSET Orientation Meeting, which was held in Boston in August, 1985. She was able to step back and realize how much her team had accomplished in the previous ten months, and take the time to ponder how the LPT could be most effective in the coming year. When she returned to Concordia she convened a slightly different NAPSET team: some of the previous year's members had fallen by the wayside or left the district, and some new people had expressed interest in participating on the LPT. The new team was able to pick up where the previous team had left off and ran smoothly from the outset however.

Concordia's CAA goals for the second year were:

- Provide assistance, possibly through an outside consultant, in assessing the appropriateness of adaptive devices for meeting the needs of visually impaired students.
- Provide information on software for vocational assessment.
- Provide consultation on options for increasing use of existing hardware and software.

The first two need areas represented new undertakings for the team. One LPT member who used micro-computers regularly in her work with visually impaired students, was frustrated by her inability to find appropriate adaptive devices. As her needs were quite specialized, NAPSET located and brought a specialist in adaptive devices to the district, who was able to help her determine the best kind of equipment to purchase.

The second need area was an example of the way the NAPSET team had begun to become established in Concordia, and to cooperate with efforts not strictly limited to special education. Vocational education, which was a sister program of special ed under the Division of Pupil Personnel, was looking for ways to computerize their assessment process. The NAPSET LPT offered to share their resources and help the VocEd subcommittee locate appropriate software. The team's ability and willingness to share knowledge and resources with groups was one way of demonstrating that it was an asset to the entire district, not just to special education. It is an important kind of gesture for a group that wishes to become institutionalized in the district.

The third need area represented the team's desire to follow up on the training of district special education teachers in the technology use that was begun the year before. In their first year the LPT had organized and presented a technology fair designed to introduce teachers to various micro-computer applications. The fair was a success, but for many teachers it was their first exposure to microcomputers. Now the team needed to increase teachers' awareness and understanding of in-district software, and promote its use. Toward this end they organized an after school demonstration of several pieces of MECC software which special education teacher's might find useful, and which the district had license to copy and distribute broadly. In addition, they organized and offered another two-week summer training workshop, since the one they had offered the first year had been such a success.

The computerized IEP system developed the year before required on-going training for interested teachers (computerized IEPs were an option, not a requirements for teachers) and this training continued throughout the second year. In addition, SpecialNet was used regularly by LTP members. (The team coordinator reports that it had been very valuable in gathering information to develop a district policy on how to deal with school children with AIDS.) The team's liaison visited the district only twice the second year, once to establish need areas and outline the team's work for the year, and once to accompany the consultant who came to discuss adaptive devices. The team functioned well with little outside assistance; indeed, it had become a fairly well-established district committee during the second year. The team coordinator hoped to have the team itself institutionalized by the end of the second year. The chances of this happening, as Carol Allard herself said, were so much greater after having received two years of assistance. "It took us a whole year to get ourselves going," she said. "This year, we've consolidated. We might not have stayed together without the second year."

NAPSET CASE STUDY: MOLINA UNIFIED SCHOOL DISTRICT

District Context

External Factors

Molina is situated approximately 15 miles east of a large city in the southwest, on a high, flat desert plateau. Molina is part of a cluster of small cities which extend the area's urban development south and eastward into the desert. The freeway out of the city ends in Molina: to the north is a small mountain range and the Ft. McHenry Indian Reservation; to the east, the larger, more imposing Blackrock Mountains. There was snow on the Blackrocks in December, in spite of the pleasant 70° weather in Molina.

The city of Molina looks more suburban than urban, with sprawling residential areas and commercial buildings spread out in low-rise strips along the main thoroughfares. The school district extends well beyond the city limits to encompass 200 square miles, however, so parts of Molina can be accurately described as rural. A piece of the Red River Indian Reservation is included in the Molina School District also. Members of two different Indian tribes which share the reservation, make up approximately 1% of the total school population.

The southwest is the fastest growing region in the United States and Molina is no exception. At 270,000 residents (1983 figure) the population has doubled in the last ten years. Although Molina is a popular retirement community, the industrial sector continues to grow, so incoming residents are young and middle aged as well as older. Thus enrollment in the Molina Public Schools has been increasing steadily. Major industries in the area include tourism, year-round irrigated agriculture (especially citrus-growing), and manufacturing. Several large heavy engineering firms are represented in Molina, and a major aircraft manufacturer had just moved its corporate headquarters to Molina at the time of our first visit. This relocation created 3,000 new jobs and a considerable amount of new construction was underway. Driving east out of town, the established neighborhoods give way to new housing developments, which give way in turn to new construction sites as the city continues to expand, claiming more and more of the desert. One has the sense in Molina of being in a city the final configuration of which is yet to be determined.

The ethnic composition of the city is predominantly white, with 15% Hispanic, less than 2% Black, and a small population of Vietnamese and Cambodian refugees who have settled in Molina through the sponsorship of various local churches. In addition is the Native American population of approximately 1%.

The overwhelming sociological factor in Molina is the presence, size, and strength of the Mormon Church. The Mormon influence is quiet but unmistakable. Church members control many of the politically powerful positions in the city, and most in the public

school system. The present and former superintendent of schools are Mormon and the majority of the six assistant superintendents and the 5-member governing board are church members as well. Conservative, patriarchal, and very family-oriented, Mormons have a powerful sense of responsibility about taking care of their own people. Unwilling to accept social services from the state, they tithe church members 20% of their income to provide services in accordance with their own beliefs.

The church's concern for the social welfare of its people extends to the schools as well. Mormons are very concerned to provide a good education for their children, but very conservative in their ideas about what constitutes a good education. There is a strong feeling among "the brothers" involved in school administration that decisions should be made by consensus, in accordance with Mormon philosophy. They are generally unwilling to accept an outside "expert's" word for what their schools need, preferring to figure out for themselves how to approach a problem according to their own values. New ideas are not accepted easily and little of controversy is taught in the Molina Public Schools: there is no sex education, no politically controversial social studies, and not much attempt to understand the difficulties Native American students have in an Anglo school system. The schools are geared to the needs and governed by the values of the Mormon majority.

Mormon leadership in Molina is fiscally conservative as well. School board members want to know that the projects they spend money on in the schools will be educationally successful in Molina, not just that money spent on similar ventures has been successful elsewhere. They are not quick to try unproven educational approaches, and this conservatism directly affects their attitude toward the use of microcomputers and new technology in education.

On a more positive side, the family orientation of the community means that parents are concerned about taking care of discipline problems at home, so the schools have less trouble with vandalism, truancy, and general bad behavior than do most districts their size. Parents also tend to get involved in the schools, participating in P.T.A.s and serving on district advisory committees in a variety of areas. While local involvement varies from school to school, overall support of the school system in this community is strong.

By and large, staff in the Molina Public Schools are not members of the Mormon church. They recognize some of the above-mentioned positive aspects of working in a largely Mormon district, although some complained about the conservatism of the administration and governing board, and the related constraints placed on their teaching. The special education staff seemed particularly critical of this conservatism, but there was a pervasive sense that not a lot was likely to change in this area: it was a situation they just had to learn to live with.

The Molina school system is spread out and decentralized. Each principal is responsible for setting the overall tone of education in his or her school, partially in response to the expectations of the school's constituency. Since parental expectations and involvement in the schools vary widely across city neighborhoods, each school has a somewhat distinctive character.

The school district sets general curriculum goals for each grade level and subject, but within these guidelines teachers can remain fairly flexible. This is perhaps especially true of special education teachers, whose job is to figure out how to make material accessible to students with learning difficulties. The point here is that the district, while it lays down general guidelines and goals which tend to be conservative, does not legislate how each teacher must teach.

The Molina School District budget (approximately 150 million dollars) is put together with funds from local, state, and federal sources, with the state providing the bulk of the funding (57.5%). Local property taxes account for 34.7% of the budget. Very little money comes directly from the federal government (3.2%). The bulk of these funds are Title I monies. Special education programs, excluding transportation costs, add up to 8.94% of the district budget. Federal funds constitute 6.9% of the total special education budget.

The state has very few requirements concerning local school district expenditures so state money arrives without many strings attached. Little direction is offered in the way of educational policy either, however. The State Department of Education provides no training or training opportunities for educators and no guidance or recommendations about such complicated issues as, for example, the use of microcomputers in schools. Neither does Molina belong to any intermediate education unit which could provide guidance in this area. Thus almost all school-related issues and services are resolved and provided (or not provided) by the district itself.

Internal Factors

The Molina Unified School District operates a total of 36 elementary schools, 8 middle schools, and 5 high schools. Of an overall district population of 47,000 students, 4,100 or 8.7% are involved in special education programs. There are 300 special education teachers and 24 aides to serve special needs students.

Special Education Program

Molina offers a wide range of special education programs and services, most of them in combination with some regular education activities. These can be grouped in terms of their organization into four types:

Self-contained Classrooms: the most restrictive organizational alternative. Students are registered full-time in a self-contained classroom with special teachers, although they do participate with regular education students to the extent they are able in non-academic (and occasionally academic) classes.

Extended Classrooms: Students in these classrooms are on both special education and regular education registers. Referred to as "modified mainstreaming", this option combines some of the advantages of both self-contained and regular education classrooms.

Resource Rooms: Here students who need extra help with reading, writing, and math work from 1-3 hours per day with a resource teacher in a resource room, away from the regular classroom in which they are registered.

Itinerant Services: for students who need extra help in their regular education classrooms. Itinerant teachers move from room to room as needed.

Molina has programs and teachers to serve a long list of special needs and conditions. Programs provided in self-contained or extended classrooms are:

- Trainably Mentally Handicapped (TMH)
- Educably Mentally Handicapped (EMH)
- Pre-Employment Preparation in high school (PEP)
- Emotionally Handicapped (EH)
- School Home Adjustment Reinforcement Program (SHARP)
- Learning Disabled (LD)
- Language Disordered (LaD)
- Educably Mentally Handicapped/Language Disordered (EMH/LaD)
- Physically Handicapped (PH)
- Hearing Handicapped (HH)
- Early Need Recognition Involving Children with Handicaps (ENRICH)

Resource rooms are provided for:

- Learning Disabled
- Emotionally Handicapped
- Physically Handicapped
- Hearing Handicapped
- Speech and Language Handicapped

Itinerant services are provided for:

- Visually Handicapped
- Physically Handicapped
- Hearing Handicapped
- Homebound Students

Most self-contained and extended classrooms are located in regular district schools. Classrooms for high incidence populations such

as learning disabled students are provided in all schools; low incidence programs, for physically handicapped students for example, are located in one school at each level. Molina also has four schools devoted entirely to special needs programs. The Parker School serves trainably, severely, and profoundly mentally handicapped students. Molina Vista and SHARP provide programs for emotionally handicapped students. Stanton Hall, a high school program for pregnant girls who choose not to continue attending their regular high school, is included in this group.

Molina School District also provides on-the-job training in diversified occupations for special education students in all its high schools, and occupational and physical therapy programs for children with motor and/or sensory problems. Related services include audiology testing, health services, pyschological services, and comprehensive vocational evaluations.

Administratively, the special education department falls within the Division of Pupil Personnel. The Director of Special Education answers directly to the Assistant Superintendent for Pupil Personnel. There are three assistant directors or "consultants" beneath the director who oversee different parts of the district's programs: one is in charge of elementary programs in the northern half of the city and the SHARP program, one is in charge of elementary programs in the southern half of the city and the itinerant programs, and one is in charge of the secondary school programs. In addition, the department has eight program specialists who provide assistance and resources to special education teachers, especially to new ones. They mediate between the principals and the consultants, who are the special education teachers' two "bosses." They also mediate the yearly evaluations which the consultants write about each special ed teacher within his or her jurisdiction, and correct any inaccuracies which they might contain. The special education department tries to provide guidance, resources, and support for their teachers, but allows them a good amount of leeway in deciding how to go about their teaching. The department does not have its own unique set of goals for students. Rather, special ed teachers modify district-wide goals for each individual student, using different techniques to teach the same general material.

Overall support for special education programs in the district is generally strong. There is some lack of understanding about the particular needs of special students among upper level administrators, and communication between the curriculum and instruction department and the special ed department could always be improved. But individual special ed teachers generally do a good job of communicating about the needs of their students to regular ed teachers, and helping them work out any difficulties they may have with the students.

Financial support for special ed programs is more problematic. Administrators and school board members are concerned about the cost of the programs, and in particular have not been convinced of the need to or advantage of using advanced technology in special

ed classes. When Molina applied to the NAPSET project, the special ed department had only three Apple computers for use in their programs, with one more in the special ed office. The three Apples were used with a variety of peripherals with physically handicapped students. Because these few microcomputers dramatically improved the physically handicapped students' ability to interact with course material and had great public relations value, the expenditure of funds was approved by the school administration. Their attitude towards microcomputers in general was highly skeptical, however, in part because of the expense and in part because they had had a less-than-satisfactory experience with micros in the regular curriculum (see below). Thus the NAPSET liaison and local planning team started out knowing they would have to convince the administrators and governing board of the importance of any technology plan they came up with if they hoped to have any part of a plan funded by the board.

Technology in the District

Molina has a limited computer literacy and programming curriculum in its junior high and high schools, with a pilot program in word processing in one elementary school. Each school has approximately 35 Pet 80-32's, for the most part all located in computer labs.

In junior high, students take a four-week computer awareness class during their math period. In eighth and ninth grade a continuation computer awareness and a LOGO elective are offered. The computers are old (the district purchased them during a special 3-for-the-price-of-2 sale) however, and not very flexible. All the units in a lab are wired together, so everyone has to work on the same program at the same time. It is not possible to boot up individual micros with different software. Moreover, the software the district owns is not of particularly high quality, nor does it integrate well with the curriculum. Special needs students' use of the microcomputers is virtually non-existent. Because the programs in use require a considerable amount of bookwork before a student can go to the terminal, the high-incidence LD students who would be most likely to use them often never make it to the keyboard. Two special ed teachers described the computer classes as a very negative experience for LD students. No microcomputer program or class has been developed specifically for them. Computer assisted management is being piloted in eight elementary schools in Molina also, but has not received much support from the teachers.

The district hired a full-time computer coordinator for the first time this year. He replaced a half-time coordinator who had quit his job in frustration because nothing he developed was ever approved by his superiors. At the time of NAPSET liaison's first visit to Molina in December, the computer coordinator was in the process of assessing existing programs and developing several possible plans for an integrated K-12 computer curriculum. His position was in the Basic Skills Department; he worked with the standing curriculum committee rather than a separate computer

curriculum committee. He acknowledged that the existing computer classes were not very successful, but was faced with the problem of how to make use of a lot of old and not very effective technology. He was also working in a kind of void as the district had budgeted no money for computer technology, so anything he developed would have to be funded through a budget override which he was not assured of getting. It was not clear whether the work he was putting into the various plans would bear fruit eventually or not.

The special ed department has focused its use of technology on its physically handicapped population for several reasons: the group is small, the difference that new technology makes in the students' educational progress is dramatic, and the expenditure was justifiable in the eyes of the school district's governing board. The public relations value of these few computers was not lost on the governing board, and they gave greater visibility to the special ed department as well.

The three self-contained PH classrooms at the elementary, junior high, and high school levels each has an Apple II+ with various peripherals which students have been using for a little over a year. Greatest success has occurred at the high school level, where the PH teacher has a strong personal interest in microcomputers and spent a lot of his own time figuring out how best to use them with his students. The computers were used less frequently and less successfully at the lower levels, in part because staff training provided by the technology manufacturers had not been particularly useful, and in part because most of the staff in the two classrooms has changed since the equipment was first purchased.

Nothing has been done departmentally with computers in the higher incidence LD classrooms in Molina. The administration has been very skeptical about committing itself to technology expenditures for such a relatively large population, so anything done with computers in LD classrooms is on individual teachers' initiative and with their own equipment.

The special ed department has no connection with the regular ed computer program. Planning team coordinators hoped to establish a connection by including the district computer specialist, whose work had been limited to regular ed programs, on the local planning team.

Innovation in the District

Molina has participated in federal assistance projects in the past; in fact, one of the coordinators of the Local Planning Team worked with people from The NETWORK in the National Learning Disabilities Assistance Project in 1972, so the protocol for "technical assistance" was not new to them. On the other hand, change seems to come slowly to the Molina school system. The attitude of the LPT members was instructive in this regard. As one member put it, "The district is willing to change, but it

doesn't jump into things without consideration. It has done innovative things in the past but it is also conservative." The conservatism of the superintendent and the governing board was clearly felt to be an inhibiting factor. Although the district fostered the attitude that it wanted to be "the best it could be," the pervasive sense was that change would not come easily, and the team would have to plan carefully if it wanted to see new policies or practices put into effect. In the past new programs typically had to go through a pilot test period before the board was convinced that they would be effective in Molina. The planning team eventually realized that this would need to be their strategy as well.

Coupled with the administration's cautiousness toward change was a not-particularly-positive experience with micro-computers in the regular ed curriculum. As well as making an ultimately imprudent hardware purchasing decision, the district had been piloting a mediocre computer managed instruction system without sufficient training and support for the teachers. It was not popular with most teachers. This experience further predisposed the administration against investment in advanced educational technology.

On the positive side, one of the district's more open-minded assistant superintendents had recently assumed the position of superintendent. This man was more interested than his predecessor in the use of technology in education, and the planning team was banking on his interest to help them win board approval of their proposals.

NAPSET Technical Assistance

Chronology of Significant Events

October 14-16: Orientation Meeting, Danvers.

mid-November: Liaison phone call to Molina to debrief the orientation meeting and set up first on-site visit. Meeting of Molina's LPT preparatory to the first on-site visit.

December 18: Case study researcher spends day in the district interviewing a variety of special ed teachers and administrators. NAPSET liaison arrives and meets with local coordinators.

December 19: Liaison meets with LPT in the morning to establish goals; tours special ed facilities in the afternoon.

January 9: Liaison sends letter to Molina about research available on micro-computers in LD classrooms.

February 6: Liaison sends 18 abstracts on information requested by LPT members at first on-site meeting.

mid-late February: Several phone calls and SpecialNet communiques made regarding the second on-site visit.

March 13: Liaison makes second on-site visit; presents a special ed technology overview and information on funding sources and reviews LPT's work to date.

early April: Liaison phone call and letter regarding previous meetings.

April 16: Notification that Molina will continue to receive assistance through the next year.

early May: Phone calls and SpecialNet communiques to prepare for third on-site visit.

May 23: Liaison conducts one-half day meeting with LPT; presents a software system workshop, reviews pilot test proposal, discusses plans for next year.

LPT met infrequently from January to March, then regularly thereafter until the end of the year -- every two or three weeks.

Michael Mayo, NAPSET technical assistance provider for the district, came to Molina with few assumptions about appropriate assistance beyond a strong commitment to the importance of planning for change. In particular he advocated a self-conscious longterm kind of planning in which a district takes stock of its situation and charts a realistic course for change, prioritizing its needs and taking into account the availability of resources and support. This commitment was communicated to the planning team during his first on-site visit in December. He stated specifically that he envisioned this kind of conscious planning to be the team's primary work, and pushed for making a written three or five year district plan for computer use in special ed the team's number one goal.

Reflecting later on his first visit to Molina and on the make-up of the local planning team, Mike noted that the needs of this large district's special ed program were diverse and that team members represented a wide range of different interests. Consequently, the group did not have a clear "natural" focus. He felt that someone would need to assume a leadership role to keep members focused on a limited number of specific goals, as well as to galvanize them into action when their lack of common interest dissipated their energy and concerns. The person he felt most able to perform these duties was Jan Gross, special ed consultant and one of the district's original co-coordinators. Mike predicted that little progress would be made if she failed to take this kind of responsibility for directing the team's activity. He also expected that the new

superintendent's interest in technology would be likely to play a significant role in the planning team's ability to get any new programs approved.

Local Planning Team

The local planning team members, as mentioned above, were highly varied with regard to both special ed concerns and technological sophistication. The coordinators had followed NAPSET's suggestion to have a variety of interest groups represented on the LPT closely. Molina's planning team included:

Rita Pace: mother of a child with cerebral palsy and a special ed aide. Not very sophisticated with regard to either technology or committee work.

Celia Cooper: LD teacher, new to the district, with experience using micro-computers with LD students in the district she had come from. Taught at the junior high level.

Gary Winkowski: district computer specialist, new to Molina. Working to improve a mediocre program in regular ed. As yet unknown to special ed; chosen in part to establish ties with the regular ed computer program.

Beth Perinchief: teaches physically handicapped elementary school students. Hoped to learn more about how to use the equipment she already had.

Jackie Rowe: principal of the elementary school which houses the physically handicapped program. Experienced in evaluating new educational programs.

Pete Carton: works with physically handicapped students in high school; knows the nuts and bolts of computer technology best of anyone on the team. Energetic and full of ideas but without broad influence in the district.

Anita Pacos: program specialist for mentally handicapped, autistic, physically handicapped and multiply handicapped students; also in charge of occupational and physical therapy programs. A thoughtful person with an understanding of both the everyday dilemmas faced by special ed teachers and the mechanics of the administrative bureaucracy.

Herbert Mack: Director of Special Education. Valuable for his political clout and the greater weight his presence gives the committee, but inactive as a working member.

Jan Gross: consultant for special ed in elementary schools in the northern half of the city and for the itinerant programs; one level beneath Mack in the special ed administration. Has actively pursued possibilities for using new technology in special ed in Molina; wrote the original NAPSET application; constitutes the driving force behind the committee in spite of her quiet manner.

Molina's Cooperative Assistance Agreement (CAA) was hammered out during Mike's first on-site visit in December. He had sent a preliminary draft of this document to the local coordinators in advance of his visit for their review. This draft had been created from information on Molina's original application and from discussions with Herb Mack and Jan Gross at the orientation meeting in Danvers in October. It included a summary of local needs and conditions, then specified three priority need areas and outlined how they would be addressed in the upcoming year. In his preliminary draft, Mike concentrated on areas in which Molina had already committed funds and done some work. Specifically, it built upon the program Molina had developed for its PH students and the special ed software collection it had begun to accumulate. NAPSET assistance was also offered in the selection of appropriate computerized applications for special ed administration.

Since major expenditures for special ed technology seemed unlikely in this district and existing equipment was not currently being used to its fullest advantage, Mike suggested strengthening technology use in the PH program through targeted staff development, and establishing systematic procedures for reviewing and purchasing software, leading towards the development of a comprehensive software library. The final need area, identification of appropriate management applications for special ed, was intended to dovetail with the district's impending acquisition of a new mainframe computer, and would inform procedures for special ed use of the new hardware system.

At Mike's first on-site visit the planning team convened to discuss and revise the CAA draft in light of the district's strengths, weaknesses, needs, and resources, as identified on the Technology Implementation Profile (TIP) completed by each team member before Mike arrived. As a result of these discussions it soon became clear that no systematic plan for moving forward with special ed technology existed in Molina, and no structure for developing such a plan currently existed. As the discussion revealed a lack of consensus about what direction the district <u>should</u> move in the future, Mike suggested making the development of a planning document the team's number one priority. The team agreed and rewrote the CAA to address, first, development of a long-term plan; second, inservice for PH program teachers; and third, development of a software library. The final need area (information on appropriate special ed management applications, especially IEP packages) was reduced to peripheral importance since the district had not yet made a decision about the mainframe, and little could be done in this area until that decision was made.

Mike established positive if somewhat formal working relations with the team coordinators Herbert Mack and Jan Gross. By the end of the visit it was clear that Jan was the person who would assume lead responsibility, and procedures were established for communication with her via SpecialNet when Mike returned to Andover. The persona Mike presented to the planning team was professional, cordial, and responsible, if a bit distant. The sense of distance may have been created as much by LPT members as

by him, however. The team members seemed somewhat uncertain at the first meeting: willing to accord him the status of expert, they were less willing to offer different or dissenting opinions. Since the purpose of the meeting was to establish the most appropriate need areas for NAPSET to address (and at that point Mike was working from limited knowledge of the district), it was the responsibility of the team to raise questions about anything they had problems with. The meeting ended on a somewhat uncertain note as one member expressed doubt that the committee could accomplish all it had laid out for itself and others seemed to concur. In retrospect it seems that not everyone's doubts about the process had been expressed and the team was not wholey committed to the CAA that was agreed to.

Mike provided the LPT with information, training, guidance, and planning help throughout the year. Although the focus of the team's work shifted dramatically in March, Mike's suggestive but non-directive assistance remained constant throughout.

In addition to resolving with the LPT the issues to be worked on in the coming year, during his first visit to Molina in December Mike helped team members establish a protocol for meeting together every three weeks to insure a continuation of activity in his absence. Between his first and second visit (and throughout the year) he sent articles from NAPSET's information center on computers and learning disabled students, computers and physically handicapped students, and research on the effectiveness of micro-computers in special ed -- areas in which team members had requested information.

During his second visit in March Mike gave presentations (including a slide show) on special ed technology and possible funding sources for new purchases. He also discussed principles and strategies of planning, aiming toward focusing their increasingly scattered approaches to development of a longterm plan. It soon became clear that the team was in great confusion about the usefulness and very purpose of a district plan, and felt the work they had done between Mike's visits failed to address the real issue they faced, which was that long-range planning seemed purposeless if their administration was unlikely to approve any of their proposals. The team's progress had been impeded further by their failure to meet together as planned during the previous two and a half months. Jan Gross had been recovering from back surgery during this time, and no one had assumed leadership of the committee in her absence.

Clearly the Molina team had to revise its agenda. Independently of each other, Mike and Jan realized that, as a first step, the LPT had to focus on one specific technology project and work on developing a concrete plan to get it approved by the district's governing board. Given current realities, they understood that the group was only spinning its wheels trying to develop hypothetical long-range planning document.

Toward resolving the problem, Jan led the team through some group process exercises to identify an appropriate focus. The primary result was a decision to develop a pilot test in three classrooms

to use computerized word processing to help LD kids learn to write. From that point on Mike served largely as an advisor, first in the development of the pilot test plan, and then on how to present the proposal to the governing board for approval. Drafts of the plan were sent to Mike to critique and his third on-site visit in May was spent reviewing the proposal to the board, suggesting different strategies for presentation and assigning specific writing tasks to team members.

Implementation

Effectiveness of the Local Planning Team

It was not until the team had reached a dramatic impasse and their failure to make meaningful progress was made manifestly clear (both to themselves and to Mike) that it finally got organized and started working effectively. Mike's assessment that the team would require active leadership proved to be correct. During the two and one half months that Jan Gross was out the team's work (in her words) "ground to a screeching halt." It was she who was able to mobilize them into action again, although Mike's concern over their lack of progress probably provided some incentive as well.

Although the planning team's diverse composition looked good on paper, there were ways in which it hindered their effectiveness. Because team members came from different positions and staff levels they were not entirely comfortable working together. Because each of their connections to special ed was unique they did not have a common sense of purpose, and needed a leader to keep them focussed and moving. In addition, many of the teachers had not had experience working on district-wide initiatives. Most of their work went on in their own classrooms, and they were not accustomed to acting as proactive change agents. They did not have a sense of themselves as empowered in this way. While they were working on the proposal to present to the board, it became clear that many of them had never thought in terms of how to "sell" an idea to upper level administrators -- they literally had never had an opportunity to do so.

Also, until the point at which they changed the focus of their efforts, there seemed to be a pervasive sense of doubt about what the committee really could achieve. As one member put it, "Just the size of the district is overwhelming," and the governing board did not have a history of supporting the kind of innovations the team was considering. There was a sense that the team was facing an enormous, unmovable bureaucracy and had little idea of what might enable them to have an effect on it.

To its credit, the team did include several hard-working, not entirely cynical members, and it forged a valuable connection with the computer specialist for the district. Once the team regained its leadership and settled on a plausible course of action, it moved fairly purposefully. The team's success in catalyzing change, however, ultimately depended on the approval of their plan by the district.

Implementation of CAA

The first meeting of the local planning team was documented above -- in short, consultation regarding administrative applications took the back burner, and the development of a plan for change took the fore. Planning initiatives got as far as developing a philosophy statement and writing a needs assessment questionnaire for teachers, before the futility of a long range plan became apparent. In March, the team's priority shifted to the development of a plan to pilot test word processing in three LD classrooms at the elementary, junior high and high school level. The primary purpose of this tactic was to demonstrate the effectiveness of microcomputers in improving a specific skill -- LD students' written communication -- to the governing board. An evaluation of the pilot test was to be developed in conjunction with the district's research and development department. The LPT felt this was an area in which the educational value of advanced technology was clear, and might convince the governing board to commit funds to expand the program into other areas. They planned to use the proposal to educate the board about the team's philosophy, purpose, goals, and activities.

As one team member put it, "We have our goal in mind now, and we can go ahead. Before we were just talking, talking, talking, and never coming to any conclusion. We couldn't visualize anything because we really didn't know if it could happen." Once the team decided on the goal of convincing their board to fund a pilot test, they broke into small groups, and "got detailed and to the point." They developed a procedure for planning the pilot test, wrote out activity sheets, and did cost analyses. Preliminary drafts of the proposal were sent to Mike for criticism and his third visit to Molina was spent reviewing the latest draft and coaching the team on their presentation to the board. In addition, alternative funding sources were researched in case the board refused to fund the pilot test.

In the end, after all their preparation, the pilot test never got as far as the governing board. It was approved by the new superintendent early in June. Funds for twelve microcomputers with peripherals and software came out of the general Pupil Personnel budget. As of the beginning of September the equipment had been ordered, teacher training was expected to begin late in October, and students would be introduced to the computer some time in November, ahead of the projected schedule. By the end of the first year, very little was accomplished toward the original CAA goal of setting up a software review system, and nothing was done by way of further staff development with the PH teachers. When Molina learned that they would receive another year of technical assistance by virtue of their being a case study site, these two need areas were carried over onto their second year "application." In essence their continuation application consisted of a proposal to complete the activities that were outlined in their original CAA, with the obvious change of beginning their pilot test rather than completing a five-year district plan.

Outcomes

The major change in the LPT was that its members were educated into the workings of the district bureaucracy, and politicized through the process of writing a proposal that might have some chance of board approval. Members who had never before worked on a policy committee learned how to think realistically and act effectively in the context of their district. Part of thinking realistically was understanding that without a greater likelihood of board approved funding it made minimal sense to think in terms of three or five year technology plans. There was simply no guarantee that any of it would happen. They learned to work from the place they were in, which meant narrowing their expectations and working in a concrete way toward goals they could achieve. These efforts were rewarded by the approval of their carefully planned pilot test. As one LPT member put it when the pilot test plan was assured, "The pilot test will be a success now no matter what: either the program as we've designed it will be successful or else we'll learn enough in the process to propose a successful program next year." The level of confidence this remark reveals is an indication of the distance the LPT had travelled in the ten months since it began working together.

NAPSET also brought the district's computer specialist into contact with the special ed department, appraised him of some of the educational issues their students face and taught him how, in different ways from regular ed students, technology can be very useful to them. Through his participation on the LPT he became somewhat interested in special ed issues himself and made his technical expertise and resources available to the special ed department and local planning team.

The board finally did approve funding for the purchase of a new Honeywell mainframe for the district, with communicating IBM microcomputers to be placed in each school. This decision was made entirely independently of the NAPSET project, but it affects what the LPT can now think about doing in the district. All technology purchasing decisions have been put on hold until decisions are made about the equipment to be purchased along with the mainframe. Rumor has it that the special ed department may get its own IBM-compatible system to run off the mainframe for management functions, but this remains to be seen.

Factors Affecting Implementation

Two major factors affecting the planning team's ability to implement its CAA were the size of the district and the presumed need to obtain approval for any expenditures from a conservative governing board. The Molina school system is an enormous bureaucracy. It works well in that each component has designated tasks and for the most part accomplishes them, but there seems to be little communication between component parts. It is a decentralized system: individual schools are largely autonomous from each other and communicate little about what they do. In addition staff at different levels seem to know little about the

work that goes on at other levels. Teachers work with teachers and their principals, but have little connection with mid- and upper-level administrators. How policy decisions are arrived at is something they have no call to be concerned about because they rarely have input into the decisions.

Moreover, even if upper level administrators want to take initiatives and try to make changes in the schools, they have to gain the approval of a decidedly conservative governing board. The overall affect of these two factors is to make the school system seem overwhelming and unmoveable to anyone contemplating change.

The governing board's conservatism could only have a daunting affect on the planning team's efforts. They were known to keep extremely tight reigns on their budget, to be unwilling to commit funds without extensive documentation of need, to be unlikely to approve any new program without proof that it would work in Molina. As it turned out, the LPT never had to go before the board; the process of preparing to do so, however, forced them to make realistic goals and develop a concrete, logical course to action. Until then their work had been abstract, tentative, and without conviction.

Another factor affecting CAA implementation was the lack of planning experience among many of the LPT members, and the absence of precedent in the area of committee-initiated change in Molina. Most of the teachers on the committee had never worked as change agents at the district level, and the administrators had never attempted a committee approach to change. At the point at which the team decided upon a goal which seemed plausible to them they began to <u>work</u> as a team and <u>learn</u> how to be effective change agents; before that the entire effort had seemed misguided and little of significance was accomplished.

Given the diversity of the LPT members and the lack of shared special ed concerns, this planning team really needed a strong leader with a guiding vision to function effectively. Jan Gross provided this while she was at school. Her prolonged absence could not have been anticipated but during the two and a half months she was out the team virtually ceased to function.

Five months was lost before the team realized that long-term planning was not the most appropriate goal. By the same token, it took that long for the technical assitance provider to realize the same thing. Mike had never worked in a district with problems like Molina had before. Watching them flounder with the notion of a five-year plan, he realized that an actual document is not always a necessary outcome of effective planning. In Molina, it was premature to think about a five-year plan because the need for technology had not yet been generally established. Planning, instead, meant getting an accurate assessment of the district's standing with regard to technology and what the possibilities for change were, as well as what its needs were. Mike learned that it was important to find out where the district was <u>right then</u> and to work from there however small the steps might seem.

Year Two Update

The school board's approval of the LPT's pilot test set the agenda for much of the upcoming year in Molina. The team established the implementation of the pilot test of word processing with LD students as their primary goal, they reaffirmed a commitment to the two goals on their original CAA that were never addressed in the first year: the establishiment of procedures for reviewing and purchasing software, and the identification of appropriate management applications for special education.

Within the first month of returning to school, the LPT had set up three task groups and two ad hoc committees to deal with the work before them. The task groups divided up the work of getting the pilot test off the ground; there was a Teacher/Site Selection Committee, an Implementation Comnittee, and an Evaluation Committee. The ad hoc committees addresssed the LPT's two other areas of concern: Software Evaluation, and Administrative Uses. Within this framework, which utilized old LPT members in key positions and brought new people into the activities as well, a great deal was accomplished in a relatively short period of time.

Schools and teachers were chosen to implement the pilot test. Hardware for the pilot classrooms was ordered, received, and set up. A word processing software was selected and the pilot teachers, plus local facilitators and some additional special education faculty were trained in its use. Teachers began using the software in their classrooms around the end of November. Additional inservices were provided by district writing staff throughout the year for participating teachers, as well as more informal sharing/support sessions. It was decided to extend the pilot test through the end of the following year, to provide enough time for students to make substantial progress and, hopefully, test out well on the pilot evaluation. This virtually guaranteed the continuation of the NAPSET team into a third year; as it turned out, the team reorganized itself in such a way as to guarantee its continuation anyway.

Early in the year a couple of planning team members beame concerned that once the details of the pilot test were worked out, the LPT would lose its focus and cease to function effectively. These team members felt that the team should reconfigure its focus, to ensure that the group continue to addresss issues relating to technology in special education. Their thought was to turn the LPT into more of an advisory board, which would address general questions about the appropriate use of technology in special education and do some long range planning for such use. The LPT disussed this idea during their liaison's first visit in December, and in particular what issues would be appropriate for such an advisory board to address. There was a general feeling that an advisory board was a good idea, especially as the small task groups seemed to have the pilot test under control.

By March the Local Planning Team had reconstituted itself as COMPUTE: the Committee Promoting the Use of Technology in Education. The omission of special education from the committee's name was a deliberate effort on the part of the original NAPSET team to establsh cooperative working relationships with regular educators who had an interest in using technology also. The new committee was larger and included many new teachers, administrators, and parents. It began its work by conducting an evaluation and needs assessment; not surprisingly, perhaps, it came up with many of the same needs the original NAPSET team had arrived at a year earlier. This time the team was able to articulate a philosophy statement and goals, however, and later to work through objectives and activities for each goal. It seems clear that the knowledge gained through a year's experience working with these issues left the original LPT in a position to organize a long range plan the like of which they really could not consider a year earlier.

As for the pilot test, it appeared to be a real success. While the NAPSET project was finished before Molina's program evaluation was in, teachers working in the pilot classrooms expressed great excitement about their students enthusiasm and progress with word process. Whether or not this enthusiasm translates into high test scores and the Molina school board is convinced to support micro-computers in special education still remains to be seen. However, the COMPUTE committee is evidence of the fact that interest in educational technology is gaining visibility and support in the district.

NAPSET CASE STUDY: UPTON SCHOOL DISTRICT

District Context

External Factors

Upton is a small midwestern city with a population of approximately 120,000, situated in the industrial heartland of the United States. Once a thriving center for heavy industry, during the last decade Upton's economic base has deteriorated dramatically. Primarily a blue collar city, unemployment in the steel and auto industries forced approximately 25,000 of the city's residents to emigrate in the late seventies and early eighties. Industry closings and unemployment have significantly eroded the city's tax base, affecting all city services including schools. Federal funding accounts for 60-70% of the budget of the Upton schools; the local community is unable to support even the most basic services. An indication of the level of poverty in this district are the statistics concerning the federally funded school lunch program -- 80% of Upton's students qualify for this program.

Upton has a large minority population -- 60% of the city's residents are Black, 10% Hispanic, and 5% Arabic. The rest of the population is primarily of eastern and southern European descent -- white, blue collar workers with a strong sense of community ownership. Although the population of the city is primarily Black, the school board, a powerful political body in this city, has only one Black member. Neighborhoods remain fairly segregated, and though a voluntary desegregation plan has been instituted by the school district, students generally prefer to attend their neighborhood schools.

As the above demographics might suggest, Upton is a highly conservative, working class community. Fiscally conservative to begin with (Upton residents have not voted for a millage increase in 20 years), the economic depression has accentuated this tendency. The school board is no exception, and may in fact represent the more conservative extreme. Election to the school board is generally regarded as a stepping stone to more powerful political positions in the city; thus it is here that future politicians build their local reputations. In this context school board members are unlikely to support innovative programs, particularly if they have not proven to be cost effective elsewhere.

Not surprisingly, high cost programs such as special education have suffered considerably in Upton from lack of support from the political hierarchy. Special Education Supervisor (and NAPSET coordinator) Robert Weaver doubted that the special education program would even survive if it was not mandated by federal law. Although there is some understanding and compassion expressed for those students with visible physical and mental handicaps, the school district is particularly reluctant to pay the extra cost

necessary to fund programs for emotionally disturbed or learning disabled children. Remedial programs suffer from a similar lack of support.

While special education and remedial programs languish, vocational education receives the full support of the school board and the surrounding community. Although the program continues to focus on outmoded, heavy industry careers, and is less and less successful in placing students, vocational education continues to receive all the funding and resources they request. Comparing his program to that of vocational education, Robert aptly described vocational education in both Upton and the state as the "fair-haired lad" of the system.

Internal Factors

16,000 students attend the Upton schools, of which 2,100 are classified as special needs students (13%). The number of schools in the district total 31 -- 20 elementaries, five junior high schools, five high schools, and one K-12 school for students with severe behavior disorders. The quality of these schools varies somewhat by neighborhood: with those schools in more "suburban" neighborhoods have better resources and less of the conflict and strife that tends to plague inner city schools. Special needs students are less affected by these differences than other students since they do not usually attend neighborhood schools, but are bussed to those schools which provide particular programs (for example, elementary developmentally handicapped (DH) classes are provided in 11 of the 20 elementary buildings).

Special Education Program

Upton serves most of its special needs students in 201 self-contained classrooms, having moved away from the "resource room" concept, according to Robert, because of the severity of the students' disabilities. The department is staffed by some 200 professionals, plus 80 teacher aides. Average class size for a single teacher runs between six and ten students. Teachers are directly supervised by eight program coordinators responsible for particular program areas: learning disabilities; severe behavior disorders; developmentally handicapped K-8; developmentally handicapped 9-12; work study for DH-LD; work study for low incidence; visually impaired, hearing impaired, and orthopedic handicaps; and speech/language impairments. Program coordinators report directly to the Special Education Supervisor who in turn is responsible to the Director of Pupil Personnel Services.

In addition to public school based classrooms, Upton special needs students are served in the parochial schools and a number of agency-based classrooms. With the exception of one multiply-handicapped and one physically-handicapped class, agency-based programs all serve students with severe behavior handicaps. These programs are in addition to the Transitional School for behaviorally handicapped students mentioned above, which serves approximately 200 students who rotate in and out of the school according to a point system.

Special Education Supervisor Robert Weaver appears as a highly competent, young professional. Prior to taking on his current position five years ago, Robert had worked for both the County Board of Education, and the State Department, Division of Special Education. In addition to his work in the Upton School District he is currently working on a doctoral dissertation and teaching courses at the State University nearby.

Robert has survived and even prospered in what is clearly a highly political and difficult position. He enjoys the respect of both his staff and his supervisors, although he complains that his department is understaffed and his job is primarily one of "crisis management". He is obviously hampered by the Board of Education, but his clear understanding of the politics of the district, and the parameters within which he must build his program, have served him well. His key failing, which became evident during the course of the NAPSET project, is a tendency to take on too much responsibility, and thus, an inability to follow through on all the projects to which he has committed himself.

As mentioned above, special education students in Upton are primarily served in self-contained classrooms. Students are also mainstreamed wherever possible. This has caused a significant amount of tension between general education and special education teachers in certain schools. General education teachers, already feeling overworked and underpaid (as indicated by a recent teacher's strike), are unwilling to take on the added burden of extra students, particularly when they may need special attention. General education teachers often feel their classes are already overcrowded, and are quick to note that special ed teachers are responsible for only 6-10 students at any one time. Lack of resources thus burdens everyone, in general education and special education alike, creating unnecessary tensions between teachers who are frustrated by a situation that is often beyond their control. This is unfortunate, as it further isolates and alienates the special ed staff, who could use the support of their colleagues.

Innovation in the District

As might be expected in a politically and fiscally conservative district experiencing a budget crunch, educational innovations are difficult to introduce. Upton teachers have adopted a somewhat cynical attitude about this, claiming that lack of support and follow through generally ruins new programs before they get off the ground. A recent example in the special education program illustrates this point.

A new diagnostic testing program for special education was to be introduced last fall. The school district spent $18,000 on the new materials, and planned to provide teacher training during an early fall inservice day. In addition, the district planned to rearrange teaching schedules so that classes would be covered while teachers administered the tests to each of their students individually. However, at the last minute the fall inservice day

was eliminated from the school year calendar; moreover, the school district failed to rearrange teaching schedules. These circumstances, which made it impossible for anyone to use the new testing materials, reinforced everyone's sense that the school district had failed, once again, to make a real commitment to change.

The loss of the fall inservice day was the result of a law passed last year by the state legislature which requires local districts to provide a teacher's contract that is only equivalent to, and not larger than, the number of days a teacher must be in the classroom. No longer required to provide inservice days, Upton cut them from the 1984-85 budget. The school board sees inservice training as an indulgence, particularly with regard to special education teachers who often already hold more advanced degrees than their colleagues in general education.

There have been successful innovations within the Upton schools, but they have required a tremendous amount of effort and commitment by particular individuals. Robert sees the problem in terms of middle managers -- supervisors and coordinators -- having creative ideas and understanding, but not the power to implement them, while the directors and superintendent in such a large district only have the time and energy to maintain existing programs. One creative and energetic school principal, Dr. Akbar at Hillside Junior High, has proved to be the exception to the rule, and has managed to bring about tremendous changes in his school. He claims he does not expect support or praise from the administrative hierarchy -- he knows he won't get it -- and he is satisfied knowing that he is doing the best he can. He has turned this school around, from one that was extremely troubled by racial strife, to one which is well-integrated into the community, and has one of the lowest number of suspensions of all the junior high schools in the district. Dr. Akbar runs a tight ship, but he has gained the respect of the students, teachers, and parents with whom he works. He has instituted change through benevolent dictatorship. This is a role which only an extraordinary individual is able to play, but it may be necessary to bring about change in a district that is so seriously lacking in both resources and administrative support.

Another example of a successful innovation in the Upton Schools, is a program currently run by the Pupil Personnel Services Department. The Department submitted a grant to be part of an alcohol abuse prevention training program, and twenty school personnel were trained in ways to create an alcohol prevention plan tailored to the district's needs. The training emphasized overcoming various forms of community and administrative resistance. According to Robert, what made this program a success was the way in which the Board of Education and administrative hierarchy were integrated into the planning and implementation of the program from the beginning. Early on the Adelphi University trainers gave a formal presentation to the Board of Education. As

prestigious outside "experts," they convinced the Board that this program would put Upton on the "cutting edge." To their credit, the program has brought Upton national recognition.

The examples of successful innovation and change described here are exceptions rather than the rule in the Upton district. The past five to eight years have been a time of retrenchment, not one of innovation, and an observer could not help but be aware of the air of discontent which permeated the district. NAPSET, as an innovative project, was not entering fertile terrain. Although a certain amount of excitement was generated by the NAPSET planning team, the team was definitely skeptical about the feasibility of a project which not only required time and energy, but monetary resources as well. The school district's failure to implement a general education computer program, adopted on paper the year before, reinforced the team's skepticism and hesitation to moving full steam ahead.

Technology in the District

During the 1982-83 school year, Upton made its first major investment in microcomputers for use in instruction and classroom management. Twenty-one thousand dollars of Chapter II Block Grant funds were provided as seed money for hardware purchases, with an additional $35,000 provided through other budgetary allocations. In 1983-84, the district spent a total of $110,000 on additional hardware, and projected a budget for future allocations totalling close to $600,000. Two hundred and twenty-five Apple microcomputers with software and tables will be purchased over a five year period; thus, by 1987 the school district will have acquired one computer for every 66 students.

The 1982-83 school year also saw the appointment of a district computer coordinator and the formation of a district-wide computer committee. The committee was composed primarily of supervisory personnel in charge of the various program areas; for example, vocational education, special services, remedial, etc. Each program area was also to set up their own computer committees to focus more specifically on their particular needs. These committees were to be chaired by the program supervisors, who would also act as liaisons to the district-wide committee. It was not clear that these committees were actually functioning during the 1984-85 school year.

The district-wide computer committee, however, is functioning, and has written a five year computer plan, focusing on four major goals:

A. To provide computer literacy for all students in the district.

B. To provide increased opportunities for student/computer interaction at all levels . . . K-12.

C. To provide for increased use of the computer as an instructional tool in all instructional areas; e.g., math, reading, remedial, special education and gifted, vocational, business, English, etc.

D. To provide for the maintenance and expansion of the existing Computer Science and Data Processing curriculum offerings.

The plan also includes a procedure for software selection, and a schedule for literacy training for all students involved in the program.

The hitch in the Upton district computer plan came with the distribution of hardware. A certain number of Apple computers were allocated to each building, according to the number of students in attendance. The computers were to be placed in a lab setting; however, most of the school buildings were overcrowded and no space was available. (During the height of the recession in the late 70's and early 80's a number of Upton schools were closed. A recent upswing in population has led to overcrowding.) As a result most of the computers were not distributed during the 1984-85 school year. Dr. Akbar at Hillside Junior High is the only principal who has gone ahead and set up a computer lab. Being the highly motivated individual he is, he was not about to wait for someone else to resolve the problem. He found a room, appointed a lab coordinator, and scheduled time for various classes to use the lab. At the start of the NAPSET project everyone else was still waiting and, needless to say, frustrated. In addition, teachers had already realized that because of lack of training, they will not be able to use these computers effectively when they are unpacked and distributed.

The Upton district as a whole is operating at a fairly low level of technological sophistication. The primary use of computer technology has been for administrative purposes: the Board of Education houses an IBM mainframe, used for data processing, as well as career information services for high school students. Upton participates in the SCIS (State Career Information Service) computer network, allowing students to access career information through the mainframe terminals in the high schools. Moreover, the Division of Special Education, which continuously processes large amounts of data, has been using the mainframe to manage cases and track students for the past five years. Prior to the recent purchase of the Apple microcomputers discussed above, the only microcomputers used for instruction were a small number of TRS-80s with cassettes purchased for high school computer math classes, and a number of private personal computers brought in by the individual class teachers (this was particularly true in special education).

NAPSET Technical Assistance

Chronology of Significant Events

October 14-16: Orientation Meeting, Danvers.

early November: First local planning team meeting. Filled out Technology Implementation Profile.

mid November/early December: After several attempts, NAPSET liaison contacts Special Education Supervisor/NAPSET team coordinator to follow up orientation and make plans for first on-site. Plans confirmed by phone and mail.

December 13: Case study researcher spends day in district interviewing teachers and administrators. NAPSET liaison arrives late afternoon and meets with team coordinators.

December 14: Full day meeting with LPT.

January: Team meets twice to develop CAA. NAPSET liaison begins search for information to satisfy LPT requests.

February: Information sent to various LPT members. NAPSET coordinator contacts liaison to report progress on CAA and pilot test. Draft of CAA sent by team coordinator to liaison. Liaison revises and returns CAA to Upton for signatures.

March: More information sent to LPT members.

April: NAPSET liaison tries to reach LPT coordinator five times. When connection is finally made, the two discuss second on-site visit to take place May 21 or 22. Also discuss participation in NAPSET the following year.

May: NAPSET team coordinator calls first to confirm on-site, then to cancel.

August: Receive word that the Upton Board of Education has refused to allow continued participation in NAPSET.

Local Planning Team

As required by the NAPSET project, Upton appointed two coordinators for a local planning team (LPT) that was to plan and implement changes in special education technology. Robert Weaver, Supervisor of Special Education Services, took on the project and appointed an elementary school-teacher, Martha DiCenzi, as co-coordinator. Martha, a Upton native herself, has taught developmentally handicapped students in the Upton schools for the past eleven years. Prior to being appointed to the NAPSET team she had never served on a cross-district committee; thus, she was not likely to challenge Robert's authority or take on a leadership role.

Tne other members of the LPT appointed by Robert were primarly coordinators of the various special education programs. They included Joanne Willie, Coordinator of Elementary Developmentally Handicapped; Lauren Hall, Coordinator of Low Incidence Handicapped (visually impaired, hearing impaired, multiply-handicapped); Jake Pearl, Coordinator of Secondary Developmentally Handicapped; Carolyn Kowalski, Coordinator of Low Incidence Work Study; and Lisa Pelton, the newly appointed Coordinator of Speech Pathology.

The two other members of the team were Jean Halsey, Teacher on Special Assignment for Special Learning Disabilities, and Joe Lipschitz, Instructional Resource Coordinator, from the Special Education Regional Resource Center. Robert and Joe had worked together previously at the State Department of Education; hence, Robert approached Joe to be on the team, hoping that his connection to the RRC and his experience as computer coordinator for the regional center would be useful to the team. Joe was by far the most knowledgeable member of the team with regard to computer technology.

Although not very knowledgeable about technology, this team appeared to be a high powered group, experienced with planning and with the politics of the Upton schools. As a group of administrators in charge of the various special education programs they knew each other well and seemed capable of working well together. As far as technical experience, Jake had had experience with SCIS and had done some software review. Joanne sat on the district computer committee, and although she, herself, had not had a great deal of experience, she seemed well aware of the issues involved in planning for the use of technology in special education. Carolyn was also aware of some of the issues, particularly in her own area -- job development. Although one of the least experienced members of the team in terms of actual use of computers, she was also one of the most visionary, expressing a great deal of concern about the need to develop programs which will give special needs students the skills they need for an increasingly technologically sophisticated job market.

Development of the Cooperative Assistance Agreement (CAA)

Through a series of meetings and conversations, the NAPSET liaison and the Upton planning team developed a cooperative assistance agreement. The CAA formally addresses the needs of the Upton School District, and the responsibilities of both the NAPSET liaison and the Upton planning team in carrying out a series of activities which will meet these needs.

The three priority needs areas specified in the CAA are:

1) To develop a written plan that identifies the goals and objectives for technology use in the special education program and that can be used to direct decision making and planning.

2) To assess and analyze the specific training needs of teachers and to develop an inservice plan so that teachers will receive the training they need in order to implement the use of technology in their classrooms.

3) To implement a Pilot Project in the 1984-85 school year that will successfully demonstrate the efficacy of technology use with handicapped learners.

The CAA addresses the specific conditions found in the Upton School District, and the concerns raised by the LPT. The document, however, also reflects the concerns of the NAPSET liaison and a particular technical assistance strategy developed by the NAPSET staff. From the beginning, NAPSET put a great deal of emphasis on planning for change. This theme ran through all levels of NAPSET technical assistance, beginning with an extensive introduction to the Concerns-Based Adoption Model (CBAM) at the Fall Orientation Meeting attended by all local coordinators. CBAM is a theoretical framework which analyzes the introduction of an innovation into a social system (e.g., a school), as a process involving people at different stages of acceptance and use.

The Upton team seemed comfortable with this planning focus. They recognized a need in their district to overcome the resistance of the school board, and felt that the best insurance for instituting the desired changes would be a written plan formally approved by the board. One of the activities included under this priority need area was a special board session at which the NAPSET liaison would make an "expert presentation" designed to convince the board of the need to go ahead with the plan. After their experience with the success of the Alcohol Abuse Prevention program, the team was convinced that an outsider, acting as an expert advocate, would be essential to introducing special education technology as well.

Training needs were addressed by the second priority need area on the CAA. The Upton team recognized that a major problem in introducing change in their district has always been lack of appropriate training and follow through support. Thus far little, if any, training had been offered to teachers in the use of computers in the classroom, even within the scope of the district-wide five year computer plan. This team was well aware of the fact that without appropriate training, teachers would be unable to use the microcomputers effectively as a teaching tool.

Available time to offer inservice training, however, was a major stumbling block for the NAPSET team. Since inservice days are no longer provided in the teacher contract, the team had little idea as to how it might provide this training. Consequently, as an initial step the CAA required only that a needs assessment be carried out, and a plan developed. Training itself would not be provided until the 1985-86 school year.

The third priority need area identified by the CAA was a pilot project. Again, because of the lack of board support, it seemed appropriate and even necessary to demonstrate the effectiveness of using computers with special education students in a concrete fashion. Initially, two ideas emerged for pilot projects with somewhat "flashy" results. The first was a project focusing on vocational education; for example, something that would result in the placement of students with a local company. This idea fit well with the needs of a district in which vocational education is highly respected. The board would be particularly pleased if they saw the use of computers in special education as a means of making these students more self-sufficient; for example, taking them out of sheltered workshops, and giving them skills necessary for "real jobs."

A second suggestion was for an instructional program at a particular grade level, with a particular handicap group, in one subject, such as math. A pre-test and post-test would be designed to demonstrate the efficacy of the program. Elementary or junior high developmentally handicapped students were suggested as the target group. Developmentally handicapped students were considered a good target group for two reasons: first, the DH classes are housed in two buildings, an elementary and junior high school, with principals who are very supportive of the special education program; and second, the school board was thought to be more likely to approve of a program which targets DH kids, whom they recognize as handicapped, as opposed to kids with "invisible" handicaps such as learning disabilities or behavior disorders.

First On-site Visit

Deborah Roody, the NAPSET liaison, visited the Upton district only once during the first year of the NAPSET project. She spent one day in mid-December meeting with the LPT in an attempt to hammer out the basic need areas and activities for the CAA. A second visit was planned in May, but was cancelled by Robert at the last minute. He had wanted to provide a technology awareness workshop for administrators, but had been unable to find a time at which everyone could participate in the session.

The on-site visit in December was planned primarily as an information sharing session. It was a chance for the LPT to meet Debbie and learn more about the NAPSET project, and a chance for Debbie to get a more concrete understanding of what kinds of services she would be providing. The morning session was devoted to personal introductions, an introduction of the NAPSET project, and a short run through of the Concerns-Based Adoption Model for the team. Debbie's focus was on getting the team to see themselves as change agents. She wanted them to become aware of their own concerns as well as the concerns of their colleagues as they embarked upon the task of introducing new technology into the special education program. The afternoon session focused on the CAA and developing the priority need areas discussed above.

As a former special education director, Debbie seemed to have excellent rapport with the LPT during her first visit. Her concrete experience in special education gave her the knowledge with which to address their concerns, and direct them toward possible solutions. She was often able to do this simply by telling stories of her own experience with situations similar to those confronting the team. In addition, her keen awareness of the politics which so often hampers special education programs (and which we had seen was particularly problematic in Upton) gave the team confidence in her ability to provide them with appropriate support and advice.

After Debbie's initial visit the local planning team met twice to develop a statement of purpose for their team, and to draft a CAA with specific activities designed to meet each of the three priority need areas identified during the first on-site meeting. The LPT took on the title of Special Education Computer Committee in order to fit themselves into the district computer committee structure described above. Their initial statement of purpose declared that the committee hoped "to provide computer literacy and opportunity for special education student/computer interaction at all instructional levels (K-12) in the district, so that the Board of Education, Administration, System Wide Computer Technology Committee, Teachers, Parents, Students, and Community will be ecstatic and will want to provide financial, and physical support in terms of skills and professional expertise." The committee intended to "generate overall goal(s) for special education computer technology," "develop an implementation plan," and "develop and maintain computer technology programs for handicapped students." Their goals also included "sharing skills, expertise, and creativity" among themselves as a committee.

These goals were given a more concrete form in the construction of the CAA, which specified particular activities the LPT would engage in throughout the year. Since Debbie did not visit the district after the first on-site in December, any progress the LPT made in implementing the CAA was accomplished on their own. The only other technical assistance they received was information from the NAPSET database. Debbie sent information on topics that individual team members had expressed interest in at the on-site meeting. Information sent in February and March ran the gamut from general funding sources to adaptive equipment, keyboarding skills, authoring systems, vocational training, and research data on the use of computers with handicapped students. No additional requests for information were made after the on-site visit, thus Debbie was unable to provide the team with any more specific information that might have been helpful in implementing the CAA.

Implementation

Implementation of the CAA

Although the Upton LPT set a regular bi-weekly meeting time, they were unable to keep to this meeting schedule after January. An administrative review, as well as an on-site evaluation of the

special education program took up a great deal of administrative time and effort, leaving the special education technology effort languishing without leadership. Those things which have been accomplished, have been primarily through individual effort rather than through the efforts of the LPT as a whole. This has meant that concrete tasks which individuals could accomplish alone have been taken care of, while the planning effort has barely gotten off the ground.

Priority Need Area A from the CAA specified writing a preliminary computer plan addressing special education needs. In an effort to gather information to write that plan the LPT decided to create a computer resource room and central filing system so special education staff could access and review special education software. Robert has established a centralized file, and found space for the computer resource room. He hoped the room would be fully functional next year, and would be a place where teachers can come and get practice using the available equipment.

Priority Need Area B, a plan for staff training has moved forward more slowly. Robert was pleased that he managed to secure one staff development day next fall to be devoted to technology. He also claimed that a needs assessment was underway. However, it did not appear that the LPT had drawn up a formal needs assessment instrument as they had originally intended. Moreover, they did not determine how to provide on-going inservice training, something which they believed to be a priority in the light of their own experience with "one-shot" training sessions.

The most dramatic achievement of NAPSET during 1984-85 school year in Upton was the implementation of a pilot test project. The planning team, however, had minimal (if any) involvement in the planning, implementation, and evaluation of this project. The project was initiated by the State Department of Education, and implemented through the Special Education Regional Resource Centers. Upton and the Special Education Regional Resource Center (SERRC) submitted a joint application with Joe Lipschitz from the planning team acting as the SERRC liaison. The project targetted elementary learning disabled students, and involved the use of word processing to improve language arts skills.

As discussed above, the original idea for a pilot project was something "flashy" that would show immediate results. Some thought was given to pursuing a program which would target the elementary DH population, and focus on math skills. Such a project, it was hoped, would avoid the problem of students having to learn extensive keyboard skills prior to making any real progress. Nonetheless, since the word processing project was available with funding, training, etc., the LPT decided to take advantage of it. According to Robert, the team felt it was important to establish this connection to the state and regional centers, particularly in light of future funding possibilities.

An intermediate (4th through 6th grade) LD class was involved in the pilot test. Nora Bellamy, the Upton teacher chosen to implement the project, and Joe Lipschitz attended an all day training session given by the State Department of Education. This was Nora's first experience using a computer in her classroom. At the training she learned how to use Bank Street Writer, the word processing program used in the project, and was given instruction in how to run the three month pilot test.

The objectives of the pilot project were defined as follows: students will learn to operate a computer and printer; learn keyboarding skills; learn word processing skills; and develop a positive attitude toward written assignments. Students were given a pre-writing test in which they composed a paragraph which was sent to an evaluator who rated the complexity of the actual writing. They were then taught to use the Apple computer and printer in their room, and were given 40 minutes a day to work on keyboarding skills and composition activities. After three months students were given a post-test, in which they were required to write a story on the computer. This story was again sent outside the district to be evaluated; thus, the Upton planning team did not have to participate in either implementing the project or monitoring its success.

Nora claimed the program was a great success in that students caught on to word processing quickly and felt very successful. She felt they had more self-confidence, and were less afraid to sit down and write a story. She was not, however, confident that these skills were transferable to pen and paper; students who like to write on the computer she felt would not necessarily do so without it. She, herself, felt more at ease using the computer as an instructional tool, and hoped to be able to continue to use it the following year. She had not found it particularly difficult to integrate the computer into her classroom, possibly as the result of good training and support, or, more likely, simply due to her own skills as a classroom teacher.

Outcomes of Implementation

As the above description suggests, NAPSET was not overwhelmingly successful in Upton over the 1984-85 school year. In terms of actual changes in practices, the pilot test was the only implementation of new technology. At this point it is difficult to determine the ultimate success of the project. One of the primary goals for the pilot project was to convince the Board of Education of the efficacy of using computers with special needs children. Three months was probably just enough time for students to begin to master the use of the keyboard and understand the mechanics of the word processor. It is unlikely that in such a short time there would be evidence of significant improvements in students' writing skills. Although the teachers got involved and the NAPSET team may be impressed by an attitudinal shift among students (they are more exicted about writing), this will not produce the kind of evidence necessary to convince a very skeptical school board.

Other changes which have taken place in the district are less concrete but nonetheless important. By being part of a federally funded project, the Special Education Department's need to establish a computer program has gained some legitimacy. Although they have not as yet gained the support of the school board, the Director of Pupil Personnel Services and the Superintendent have both expressed their support by agreeing to an inservice day devoted to special education technology in the fall.

In addition Robert claims that LPT members have taken advantage of free trainings and workshops; thus, there has been an increase in knowledge and awareness with regard to the use of technology. This awareness, however, does not seem to have penetrated much beyond the NAPSET team. There was little awareness of the NAPSET project at all, beyond team members and key administrators. Nora Bellamy, the teacher involved in the pilot test, knew nothing about other NAPSET activities. Other teachers indicated a similar lack of knowledge and understanding -- having had bad experiences with new programs before, they expressed a studied lack of interest. It was clear that until some concrete evidence could be provided, indicating that a real change would take place, they were not interested in expending energy. The first step in Upton will have to be removing the computers from the closets and making them available for use. Until that time the staff will not be motivated to learn how to use them.

Factors Affecting Implementation

Upton failed to take full advantage of the technical assistance offered by NAPSET during the 1984-85 school year. Although five days of on-site assistance were available, the NAPSET liaison visited the site only once. The visit was primarily designed to introduce the local team to the project, and push them to begin thinking about what they wished to do. Although the meeting itself was successful, a number of intervening factors prevented the LPT from making any great strides forward during the school year.

The on-site evaluation of the special education program and the administrative review took priority over NAPSET in Upton during the winter term. These review processes completely overloaded the special education supervisor, who already suffers from lack of funding and staff in his department. He was, thus unable to direct the NAPSET effort. Furthermore, the co-coordinator of the team, Martha DiCenzi, was not in a position to take over this role. As the only classroom teacher, she had the least seniority of anyone on the team. Her lack of experience with committee work, and her own insecurity in taking on the responsibility of determining cross district needs made it impossible for her to take on a leadership role. Other team members seemed quite capable of leadership, but may have been hesitant to challenge Robert's authority. Had he delegated this responsibility the team might have been able to accomplish more.

It is difficult to determine how much the lack of resources and board support impacted the success of NAPSET. The team never confronted these issues directly; thus their impact, if significant, was indirect. Lack of time and energy, of course, may have prevented the NAPSET team from meeting and taking on the planning effort called for by the CAA. Since a plan must be written prior to acquiring board approval, the board has not yet been brought into the process. Their impact is felt more at the level of staff morale -- there is a general hesitancy to take on new projects, which so often die before getting off the ground in this district.

This attitude is probably responsible in part for the way in which the pilot test was implemented this year. The quick fix method -- "let's take what's available" -- was substituted for a thorough assessment of what was needed in the district. However, a pilot project which required investment of district resources might never have been approved, something which the team had to consider.

Nonetheless, the primary problem in Upton this past year seems to have been a lack of leadership. Had NAPSET been a priority, the LPT would have likely moved ahead on a plan for implementing technology and a plan for inservice training. These efforts could have gone ahead without board approval or additional resources -- they did, however, require the team to meet, acquire knowledge, and develop a set of concrete tasks to be accomplished. Had the Team accomplished their stated goals this past year, they then would have had to confront the larger issues as they entered their second year of the NAPSET project. Having developed a written plan, however, with written justification of their needs, they might have found themselves better prepared to face the struggle with the Board of Education.

Year Two Update

As a case study site, Upton was asked to continue its participation in the NAPSET project through the 1985-86 school year. In the hopes of making some clear progress, they developed a set of concrete tasks to focus on during their second year. These included the implementation of inservice training, the development of a software review system, and the expansion of the pilot test program to include DH students as originally planned. However, the team was faced with the problem of board approval sooner than they expected. Essentially the board refused to approve the necessary release time to allow team members to meet during the following year.

Had the NAPSET team included the board earlier on in the project as originally planned (by having Debbie make a special presentation); or had they been able to demonstate concrete success with the pilot project, they might have been more successful in circumventing this roadblock. Whether the team will be able to implement any of their plans for the future without NAPSET's assistance remains to be seen.

NAPSET CASE STUDY: OSWEGO INTERMEDIATE SCHOOL DISTRICT

Regional Context

The Oswego Intermediate Schools District, located in the industrial midwest, was one of two intermediate units chosen to participate in the NAPSET project during the 1984-85 school year. Although the Intermediate School District (I.S.D.) Offices are in close proximity to a major industrial city, the I.S.D. serves 28 LEAs which range from relatively poor rural areas to some of the wealthiest suburban districts in the state. The four LEA's participating in the NAPSET project -- Hollis, Fairleigh, Williamston, and Lodi -- were chosen, in part, to represent this demographic variability. Hollis is a small, primarily rural community located in the northwest corner of the intermediate unit's service area. Fairleigh, the wealthiest of the four districts, is the home of many auto manufacturing executives. Williamston is a large, middle income community housing many of the city's auto workers; while Lodi, also primarily middle income, is a smaller community with a number of local light industries. Because of their demographic diversity, Hollis and Fairleigh were chosen as case study sites by the NAPSET evaluation team.

The Oswego Intermediate School District is housed in a spacious, modern building on the outskirts of the city. Funded by a county millage, a small percentage of federal funds, and independent grants, the I.S.D. has extensive resources which are evident in its plush surroundings as well as its programming. Services are offered to local districts at minimal or no cost, but it is up to the LEAs to take advantage of what is made available to them -- the I.S.D., well aware that local districts often dislike outside intervention, is careful not to press its services on unwilling districts.

The I.S.D. runs a number of special clinics, including speech and language, psychology, a learning assessment/communication enhancement center, and a deaf baby program. Each of these clinics provides independent evaluations for students in any of the 28 participating LEAs. The I.S.D. also houses an information resource center with an ERIC collection and two computer labs used for workshops and courses, as well as independent review of hardware and software by local teachers.

In recent years the I.S.D. has focused a great deal of attention on technology-related projects. In addition to the Learning Assessment Clinic/Communication Enhancement Center which provides communication-enhancing technology to non-speaking children and young adults in regional programs for the severely handicapped, the I.S.D. has developed an entire Instructional and Interactive Computing Department (IICD). This department provides staff development and consultation for teachers and administrators throughout the 28 districts. Through classes and workshops, conferences, a newsletter and a hotline, the IICD provides up-to-date information as well as the training necessary for

districts to begin integrating computers into local curricula. In addition, through the IICD, Oswego Schools established a cross-district computing coordinators committee in the fall of 1982, thus providing a forum for communication and networking among a group of people just beginning to gain a foothold in a new field. In 1984, in response to the State Board of Education recommendation that high school graduates demonstrate competency in computer use, the Oswego Computing Coordinators put together a document entitled "Minimal Competencies for Educational Computing." In it they recommended that districts move away from computer literacy and begin to develop well integrated computer programs that emphasize computer applications and the use of the computer as an instructional tool.

Recently the I.S.D. has come to focus more attention on the use of technology with handicapped students. The Learning Assessment Clinic/Communication Enhancement Center, directed by Dr. Nicholas Powers, has over $100,000 worth of adaptive devices which are available to students on a short term basis. Most of this equipment has been funded through private grants. The Center also employs a full time augmentative communication specialist who works with local POHI (physically or otherwise health impaired) teachers and speech and language specialists to develop communication systems for multiply-handicapped, non-speaking children. One of the major problems facing the Communication Enhancement Center is the high cost of electronic communications systems, which may be of use to students for only a short periods of time. As students develop more advanced skills they need more complex systems with which to communicate. Dr. Powers is currently looking for a source of funds which could provide the center with $20,000 worth of equipment per year.

Another special education technology project currently in place at the I.S.D. is a state funded project known as Project ACCESS (Addressing Computer Concerns of Educators of Special Students). Directed by John Reece, this project primarily disseminates information to special educators throughout Oswego Schools. In addition to a newsletter and a hotline, Project ACCESS has published a series of special reports covering a range of topics, including: Effectiveness of CAI; Evaluation and Selection of Software; Micro Access for Low Incidence Populations; and CAI in the Special Ed Classroom.

As an intermediate unit, Oswego Schools provides services for its low incidence handicapped students through a number of "center" programs. These programs are funded by a county millage, but are run by the local districts in which they are located. Hollis, because it is one of the smallest districts in the intermediate district, and because of its geographical location in the far northwest corner of the I.S.D., runs no center programs. All of Hollis' low incidence handicapped students are sent to center programs in other local districts. Fairleigh, by contrast, runs several center programs: the Fairleigh Training Center for TMR students; Riverdale for the severely handicapped; Boys Town, for

emotionally impaired boys living in various juvenile homes; a program for physically handicapped students; and two programs for pre-school handicapped children. Funding for all these programs is provided through the I.S.D.

Formation of the NAPSET Team

Dr. Nick Powers of the Learning Assessment Center at the I.S.D. initiated Oswego Schools application to the NAPSET project. He, however, turned over primary responsibility to Mark Sutton, a special educator, now on the staff of the IICD. Nick and Mark invited the four LEAs -- Hollis, Fairleigh, Williamston, and Lodi -- to participate in the project both because of their demographic diversity and because these were districts with which they had had successful relationships in the past. Representatives of the four districts met with Mark and Nick twice during the summer of 1984 in order to prepare the joint application. Thus, Oswego Schools essentially had created a cross-district team prior to the first NAPSET orientation meeting.

The cross-district team, which became the NAPSET Planning Team for the I.S.D., was made up of one representative of each of the four local districts, plus Mark Sutton. Nick acted as an ex-officio member since he could not participate in all the planning team meetings. The local district representatives included Sam Godin, Director of Special Education, Hollis Schools; Diane Hawley, a special education technical assistant with the Fairleigh Schools; Deborah Chilles, special education consultant, Williamston; and Bill Travers, Director of Special Services, Lodi. J. T. Rivers, Director of Children's Services in Williamston, participated in planning meetings when available, although he had given primary NAPSET responsibility to Deborah. The Director of Special Services in Fairleigh, Gunther Loew, by contrast, was unable to participate in the NAPSET project at all. He had been appointed Acting Superintendent of the Fairleigh Schools during the summer of 1984 and found himself overwhelmed by the extent of his responsibilities. He turned the NAPSET project in its entirety over to Diane Hawley, a district consultant, whose time would not be constrained by classroom teaching obligations.

Intermediate units were given few guidelines in designing plans for their participation in the NAPSET project. They were offered ten days of on-site consultation, which they could chose to concentrate at the I.U. level or distribute among participating LEAs. Oswego Schools, from the beginning of their participation in the project, was particularly concerned with the varied needs of the participating LEAs; thus, not surprisingly, they chose the latter strategy and distributed the technical assistance across the four districts.

Their first meeting with Ray Rose, the NAPSET technical assistant, took place at the October Orientation Meeting. There, the cross-district team discussed how they hoped to structure their NAPSET participation over the following year. In order to better coordinate services, they decided that Oswego Schools should have

one Cooperative Assistance Agreement (C.A.A.), with each district (with the exception of Lodi) focusing its technical assistance on a particular disability area.

Hollis, since they serve no low incidence students, chose high incidence populations as their focus. Fairleigh chose emotionally impaired as well as POHI students; while Williamston chose trainable mentally impaired, multiply-handicapped and hearing impaired, all areas in which the district runs center programs. Having covered instructional applications in three districts, Bill Travers of Lodi decided to focus his efforts on administrative applications. His primary concern at this early meeting was obtaining assistance in setting up an Electronic Bulletin Board or mail system for Oswego Schools' 28 special education directors.

Having chosen their areas of focus, the representatives of the participating LEAs decided that they should each set up a local planning team (LPT) in their respective districts. The cross-district team representatives would chair the LPTs in their local districts and act as liaisons between committees. In this way, the committee hoped to address local needs, while also developing a coordinated cross-district plan for technical assistance. In addition to the LEA teams, the I.S.D. set up its own team, thus a total of six planning teams were constructed -- one team in each of the four districts, an I.S.D. team, and a cross-district team.

Following the October Orientation Meeting, the district representatives on the NAPSET team returned to their local districts where they set up their local planning teams. These teams outlined tentative technical assistance plans for the specific areas they had been assigned at the Orientation Meeting. Not surprisingly they often found it difficult to remain focused on specific disability areas. Local teams discovered a broad range of concerns and needs within their own districts, which often overlapped with the needs of the other NAPSET districts. Rather than reworking the original plan at the cross-district level, the team representatives simply divided Ray's time, tentatively suggesting that he spend 2-1/2 days each in Fairleigh, Hollis, and Williamston; 1-1/2 days in Lodi (where it was estimated less time was needed because of the administrative focus); and one day at the I.S.D. Although district representatives were welcome to attend technical assistance sessions at all of the sites, it was no longer assumed that these sessions would necessarily focus on different disability areas, or have any other form of overall coordination.

The cross-district planning team did not meet again until Ray made his first on-site visit in early February. The district representatives, focused on their own district needs, failed to come together to think about the coordination of their cross-district C.A.A. Because of their concern for local district "ownership" of projects Mark Sutton and Nick Powers at the I.S.D. did not coordinate the effort, but took a backseat

instead. Early on in the project, however, Mark began working to create a special education computing coordinators committee that would include all of the LEAs participating in the I.S.D.

Ray visited Oswego Schools for the first time in February, 1984. He met with the cross-district team for a half day and then spent another half day with each of the local teams (with the exception of Lodi), including the I.S.D. team.

No one had prepared an agenda for the cross-district team meeting; thus, the meeting took a number of directions. Two concerns emerged from the discussion: 1) how to coordinate adaptive equipment across districts and 2) funding. It was suggested that Oswego Schools, possibly through the Special Education Computing Coordinators Committee, begin to address the first issue, and that Ray present a funding workshop to address the second issue. Other questions concerning the coordination of technical assistance across the four participating LEAs were not addressed at the cross-district meeting. The districts had already begun to focus on their own needs, and were not prepared to discuss larger concerns. The cross-district team did not meet again throughout the project year.

As proposed at the February meeting, Ray presented a funding workshop at the Oswego Schools auditorium at an on-site visit in late May. Although they had planned for 50-100 people from across all 28 districts, only about a dozen people showed up. Those who attended found the information quite useful but were disappointed by poor attendence from other districts. The lack of interest suggested that districts were still holding back in tackling the issue of special education technology.

On the more positive side, the Special Education Computing Coordinators Committee continued to meet monthly throughout the year. Although they did not addressed the issue of coordinating hardware across districts, they did develop a set of goals and objectives which includes: 1) sharing of information; 2) promoting appropriate uses of computer-related technology; 3) involvement in existing computer user groups; and 4) promoting a consciousness around social and philosophical issues raised by the use of technology in special education. At the end of one year, it is too early to tell what the impact of this committee would be, but it appeared to be a first step in institutionalizing the use of technology in special ed programs across the I.S.D.

As a spin-off of the NAPSET project, this committee was one of the most important accomplishments of Oswego Schools during the 1984-1985 school year. The use of technology was given legitimacy at the I.S.D. level. Moreover, the committee continued to meet and, as a means of coordinating and sharing information and ideas across all 28 districts, it is likely to contribute a great deal to the development of coherent plans for the application of technology to special education throughout the county.

For the most part, the I.S.D. took a back seat with regard to the NAPSET project. As mentioned above, Nick Powers and Mark Sutton are very concerned that local districts feel independent and claim ownership of projects. They do not push their services on local districts. Consequently, when the four LEAs participating in the NAPSET project chose to focus the technical assistance on their individual district needs, Mark did not attempt to push for a more coordinated plan. He saw himself and the I.S.D. primarily as resources the LEAs were welcome to draw upon if and when needed. Ray, in fact, encouraged just that, pushing the LEAs (Fairleigh and Williamston in particular) to take advantage of the IICD, Project ACCESS and the Learning Assessment Clinic/Communication Enhancement Center. Probably one of the major accomplishments of the NAPSET project was to strengthen the bonds between the I.S.D. and each of the local districts, making them more aware of the excellent resources right in their own backyards.

Case study research at Oswego Schools focused on two of the four districts involved in the NAPSET project, Hollis and Fairleigh. Having discussed the way in which the project was structured at the county level, and the way in which the I.S.D. participated, we now turn to the participation of each of the two LEAs in more detail.

HOLLIS

Local District Context

External Factors

Hollis is a small midwestern town in the northwest corner of the intermediate unit. Although still a rural area, blue collar employment has replaced farming. As with most small communities in the region which are dependent on auto manufacturing and related industries, Hollis has been hit hard by the recent recession. Over the last decade the community has suffered from high unemployment and a declining tax base. Only recently has the community begun to see a slight resurgence in economic well-being.

The reduced tax base over the last decade has had a significant impact on school funding in Hollis. In response to budget reductions, Hollis has reduced its school day to five hours and moved to a "no frills" curriculum. Essentially the curriculum focuses on basic academic skills -- reading, writing, and arithmetic -- eliminating art, music, physical education, etc. Nonetheless, the school system has maintained standards of academic excellence. Students have continued to do well on standardized tests, proving to the community that the schools can indeed function on smaller budgets. As a consequence, the community did not pass a single millage increase between the years 1976 and 1984.

Internal Factors

Hollis schools serve 3,835 students in three elementary schools, one junior high, and one high school. Nearly 10% (350) are identified as having special needs. The teaching staff includes 150 regular education teachers, 17 special education teachers, and seven classroom aides. Special needs students are served in both self-contained classrooms and resource room environments. At the elementary level there are four self-contained classrooms -- one pre-primary impaired, one EMI (educable mentally impaired), one LD (learning disabled), one EI (emotionally impaired) -- and six resource rooms. At the junior high, there are two self-contained classrooms -- one EI, one EMI -- and four resource rooms. The high school has three resource rooms but has no self-contained classrooms. As mentioned above, Hollis serves only the high incidence special needs populations: emotionally impaired, learning disabled, and educable mentally impaired students. All low incidence students are bussed to the various center programs located throughout Oswego County.

Although underfunded, the Hollis schools seem stable and well-supported by the community. The School Board has a good relationship with the administration and teaching staff, and according to Sam Godin (Director of Special Education), is a "good board for kids." Following a rather messy teachers' strike four years ago, an entirely new Board of Education was elected. Since then relations have improved significantly. Two years ago a new

superintendent of schools was hired, and he has done much to improve the school district's image. He has been particularly important in promoting a more positive relationship with Oswego Schools by encouraging his staff to take advantage of the services offered at the I.S.D. Hollis's participation in the NAPSET project is one indication of his success in rebuilding that relationship.

Another indication of the stability of the Hollis Schools is the long term tenure of the administrative staff. The three elementary principals have been in Hollis for 20 years -- the middle school principal for 10 years, and the high school principal, although newly appointed as principal, has been in the district for 16 years. The principals have a reputation as powerful figures within the district, and as working well together as an administrative unit. This is particularly true for the elementary principals, who have been the most innovative and progressive administrators within the district.

Sam Godin, the Director of Special Education and Coordinator of the NAPSET project, was new to the Hollis Schools, having only taken this position two years ago. This was his first administrative position, having taught emotionally disturbed students for five and one-half years in another Oswego County school district, West Lake. Sam is young, but very sharp and clearly committed to his work. He seemed concerned that there had been a high turnover rate of special education directors in the district, and indicated that he planned to stick around and provide the continuity necessary for a good program. In his two years as Special Education Director, Sam seemed to have developed an excellent relationship with his staff, as well as with the school principals and superintendent. He had also established a good working relationship with the I.S.D., taking advantage of the clinics and other services which his district cannot afford to provide independently. Although he was critical of I.S.D. workshops which were at times irrelevant to the specific needs of his teachers, in general he seemed to value the service provided for special education students as well as staff.

Technology in the District

Sam's positive relationship with the building administrators in his district is illustrated by the way in which he managed to acquire microcomputers for all of his special education classrooms. For a small, rather poor district, Hollis has a fairly sophisticated computer program, particularly at the elementary level. When Sam entered the district, he decided it was time for special education to catch up. He convinced the building principals to help fund microcomputers for the special education classrooms in their buildings. Using 94-142 funds, combined with general education funds, Sam put an Atari 810XL microcomputer in almost every special education classroom in the district. Although not all of the special education staff have

taken advantage of these computers, a number of teachers have successfully integrated the computers into their regular curriculum.

Over the last four or five years, Hollis has made great strides in developing a computer program at the elementary level. In 1979 one of the elementary principals attended a workshop on microcomputers and became very excited about the possibilities of introducing them into elementary school classrooms. He interested one of his tutor-counselors, George Spiller, in the project and George began using one of three 16K Ataris to teach reading and math skills. As a tutor-counselor George worked individually with elementary students and the microcomputer was easily adapted to his needs. He found students were excited and motivated when they came to his office for their tutorial sessions. George's success motivated other tutor-counselors and classroom teachers to take an interest in the use of the microcomputer as an instructional tool and thus the program expanded. There is now a microcomputer in almost every elementary classroom.

Hardware for the computer program was funded through Chapter 2 funds, as well as PTA donations. Because the program was supported by the elementary principals, hardware and software purchases were included in the elementary yearly budgets. In addition, an elementary computer committee (with George as chair and ipso facto computer coordinator) was established in 1981, and generated guidelines for a K-6 computer curriculum. This curriculum guide discussed the computer as an instructional tool, but stressed "computer awareness" as the primary goal. Teachers were encouraged to introduce their students to various kinds of software including word processing, but given few guidelines as to how to integrate the computers into the regular curriculum.

Little formal training in the use of computers has been offered to the elementary teachers. Although the computer committee has offered a few inservices, George says individual instruction has been most successful. As teachers acquired microcomputers for their rooms, George provided them with basic instruction in how to use the machines. In addition, last year he ran a very successful "software fair," at which teachers were able to peruse some of the software now available in the software library. George has also done some training in software evaluation, and the computer committee has recently developed a software purchase form.

George believes that the computer program has been fairly successful in developing computer awareness among elementary students, but the use of the computer as an instructional tool has lagged behind. Teachers have not been given sufficient instruction in how to choose appropriate software or in how to manage a classroom with only one computer for 20 or 30 students. Although he believes all the elementary teachers in his building know how to turn on and boot up the computer, they have been unable to cope with the more complex issues of classroom integration on their own.

George is moving toward doing more word processing with his students, and is encouraging other teachers to do the same. He has found that kids love it and that it is a tremendously successful means of teaching reading and writing skills. Students who traditionally have had trouble with the mechanics of writing, spelling, handwriting, etc., can produce neat, clean papers without any errors. They feel successful and develop a new self-confidence.

In contrast to the CAI focus of the elementary computer program, Hollis' secondary computer curriculum is more concerned with business, math and programming skills. Consequently, computers are found in laboratory settings rather than individual classrooms. Special education students have access to these labs when mainstreamed, but more often are exposed to computers through SPED resource rooms furnished with individual Atari's.

Prior to the introduction of NAPSET in Hollis, the special education computer program essentially piggy-backed on the elementary program. In order to build a program compatible with that existing at the elementary level, Sam purchased the same Atari XL computers for his classrooms as had been purchased for the general education program. Those special education teachers who were interested and excited about the computers asked George for assistance and then pretty much took off on their own. The computers are being used at both the elementary and secondary levels in special ed; however, the secondary teachers have been somewhat disappointed in the kinds of software available for their students. They have found that although the skill level may be appropriate, software geared to an elementary audience either bores junior high and high school students, or makes them feel stupid.

In general, the special education department has not been particularly happy with the purchase of Ataris, feeling that more instructional as well as management software is available for Apples. In addition, since Hollis is the only LEA in the intermediate unit with Ataris, many of the inservices, workshops, and other services provided by the I.S.D. have not fit the needs of Hollis' teachers. Nevertheless, since the elementary program has decided to stick with Ataris, it would be difficult for the special education department to switch. Sam has managed to purchase two Apple computers, one for a high school resource room, and one for a middle school self-contained EI class, on the grounds that they are needed to run the IEP software recently made available by the I.S.D. In addition, the elementary school offices, as well as other administrative offices including Sam's, nave acquired Apples. Sam hopes that even if he cannot purchase them for his classrooms, his teachers will have access to the front office Apples to help with the development of IEPs and with general caseload management.

The Hollis computer program is obviously up and running, having been first conceived of in 1979, and well-supported over the past five years. Nonetheless, teachers have been given little training or even encouragement when they have hit roadblocks, or felt

unsuccessful. Only those teachers who were most motivated from the start have stuck with it and discovered strategies for appropriately integrating the technology into their classrooms. Moreover, it is often difficult to assess who is making good use of the technology and who is not. In one special education classroom we visited, two students were using a program which was designed to teach them to how to use the words 'a' and 'an.' The teacher was working with other students while they were experimenting with the computer. They were obviously simply guessing at the answers and had no sense of the meaning of the exercise. This is a common problem and one mentioned by special education teachers quite often. With only one computer in the classroom it is difficult for teachers to know at all times whether the students working on the computer are in fact learning what the program is designed to teach.

Innovation

The essentially innovative nature of the Hollis schools, particularly at the elementary level, is evident in the tutor-counselor program. Started almost 20 years ago, this program was designed to give elementary students individualized instruction, and build self-esteem through success. At about the same time that the tutor-counselor program was started the elementary schools also instituted a highly successful outdoor education program. However, tight budgetary restrictions over the past eight years have made it difficult to sustain these programs. The tutor-counselor program has survived, the outdoor education program has not. The last decade has been a period of retrenchment. Understaffing as well as the shortened school day have made it difficult, at best, to introduce new programs. In this context it is important to note Hollis success in introducing microcomputers into the classroom. Although there is certainly room for improvement, with extremely limited funds Hollis has moved far beyond many districts in creating a computer committee, establishing a software library, developing a curriculum, and encouraging teachers to use the computer as an instructional tool.

NAPSET Technical Assistance

Chronology of Significant Events

October 14-16: Orientation Meeting.

November: LEA Team established; filled out Technology Implementation Profile and sent to NAPSET technical assistant, with tentative agenda for technical assistance.

December: Cross-district team meeting; formulated tentative outline for CAA.

January: Communications concerning Hollis' specific needs.

February 6: Case study researcher visits schools and interviews teachers and administrators.

February 7-8: NAPSET liaison meets with cross-district team and Hollis LPT. Also visits some special ed classrooms.

February 18: NAPSET liaison sends CAA for signatures.

late Febrary/March: Information sent concerning Ataris. Communications concerning Hollis on-site visit.

March 28-29: On-site visit; two-day workshop covering technology awareness, software evaluation and Concerns-Based Adoption Model (CBAM).

April: Hollis asked to participate in second year of NAPSET project.

As the above discussion indicates, Hollis has made some headway, particularly in the last two years, in using microcomputers in special education classes. The Special Education Director, Sam Godin, has taken a personal interest in this project, and has encouraged his staff to take advantage of the hardware he has provided. However, a novice user himself, Sam has been unable to provide a great deal of direction and has depended on his most inspired and interested teachers to take the ball and roll with it.

Sam hoped that NAPSET would provide a structure through which his department could develop a more integrated computer program. From the beginning of the project he was clearly focused on Computer Assisted Instruction (CAI), and showed little concern for administrative or management applications. (Not that he did not recognize these as unimportant; he just did not want to use NAPSET to focus on these issues.) He hoped that NAPSET would provide his teachers with direction, as well as some of the skills necessary to integrate computers into the daily learning of their students.

In meeting with the cross-district NAPSET team, Sam was forthright in expressing his concern that the specific needs of his district be addressed during the tenure of the project. Too often he felt the IICD had failed to address the needs of his district because of their Atari hardware. He recognized that his teachers were frustrated, having been to too many Apple software review sessions. Sam appeared to be a driving force in making sure that each district received its share of technical assistance.

Local Planning Team

Sam had a definite sense of the direction he wanted the NAPSET project to take when he appointed his local planning team. He asked five teachers to participate whom he thought would have something positive to contribute to the project. Four of these teachers were already active computers users, and thus had the experience necessary to ask appropriate questions. They included George Spiller, the elementary computer coordinator mentioned above; Lisa Schuer, an elementary resource room teacher; Donna

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Butts, a middle school teacher with an EMI self-contained class; and Pam Christie, a high school resource room teacher. The fifth teacher, Sandra Beuhler, was new to the district, and appointed primarily because she taught in two elementary schools and thus provided Sam with multiple representation. This team clearly included the movers and shakers in the district with regard to computer technology, and was composed of teachers whom Sam could trust to be honest and forthright in their opinions. He chose teachers whom he knew would provide input, not those who would sit back and wait for something to happen.

Following the October Orientation Meeting for all NAPSET clients, Sam returned to Hollis and pulled together his team. Using the Technology Implementation Profile provided by NAPSET, the team assessed the district's needs and began developing goals for a two-day workshop. These goals provided the basic outline for Hollis's contribution to the cross-district CAA. The team outlined a plan for technical assistance in Hollis focusing on CAI for high incidence special ed populations. They asked Ray to provide a two-day inservice addressing appropriate instructional techniques, software review and evaluation, and curriculum integration. In addition they requested information on the implementation of change in schools.

First On-site Visit

Due to various scheduling problems, Ray did not make his initial visit to Oswego Schools until the first week in February. By this time he had established good rapport with Sam and was already fairly well informed of Hollis' needs and wants. Ray and Sam developed a good personal relationship and this seemed to work well for Ray in providing technical assistance. His wealth of technical knowledge allowed him to provide a great deal of informal advise (thus establishing his own credibility as a technical assister), while also ferreting out Sam's vision and the needs of the district.

During the February visit Ray met with the cross-district team, as well as with each of the local district teams. As discussed above, the cross-district meeting raised a number of issues which were never fully addressed by NAPSET because the technical assistance became so focused on individual districts. Following the cross-district meeting, Ray spent a half-day in Hollis visiting classrooms and talking with the LPT.

This meeting was primarily designed for Ray to get a more concrete sense of the LPT's concerns and the issues they wanted him to address during their inservice training. Ray and Sam had already discussed the general framework and the timing of the visit -- March 28 and 29 -- thus, the discussion focused more on specific questions. Concerns about finding appropriate special education software seemed to be first and foremost on everyone's mind. Ray tried to steer the discussion away from questions concerning the

"perfect piece of software" toward a more general discussion of information sources and access to software reviews. He suggested that he include this kind of information in his two-day inservice.

A related concern, but one with broader implications, was classroom practice. What were people doing in other districts, particularly at the secondary level? Pam Christie, the secondary resource room teacher, felt the need for concrete descriptions of successful programs at the high school level. She has commandeered software on her own, picking and choosing from that which is available at the elementary level, but she has found it is often inappropriate for high school students. Ray suggested moving beyond drill and practice, to thinking about word processing or even using Logo at the secondary level. Pam was excited by some of these ideas, but felt that without a printer she could not really move forward. (As a result of this meeting and Ray's workshop Sam made the purchase of more printers, as opposed to computers, a priority for the special education department.)

Ray left this meeting believing that what Hollis needed was a better sense of the future of technology in the real world. He wanted to expand their sense of "appropriate use" by taking them beyond the use of simple drill and practice software programs to the use of databases, telecommunications, word processing, etc. He hoped then teachers would think about issues around curriculum integration in terms of real world applications -- what kinds of things will students be using computers for when they are beyond school age?

Second On-site Visit

Following his February visit, Ray sent a CAA to Oswego Schools which provided for a two-day in-service in Hollis covering the following topics: the implementation of school change; the implications of research for the use of technology in special education; and software evaluation training including an introduction to various information sources. In mid-March he sent a tentative agenda to Sam covering these same topics, and having received no critical comments he went ahead with the workshop as planned.

In addition to Hollis's special education staff, representatives from Fairleigh, Lodi, Williamston and the I.U. also attended the workshop. Attendees varied a great deal in terms of their level of knowledge and sophistication with regard to the use of technology. On the first morning Ray reviewed "new directions" in research and applications, demonstrating some of the newest hardware -- speech synthesis, the Koala Pad, and the MacIntosh. He focused on the differences between the way the technology is being applied in the real world, and the way in which schools are using it, noting that schools are often overly concerned with computer literacy when it is applications that will be important in the future.

In the afternoon session Ray presented the Concerns-Based Adoption Model (CBAM) for school change, a theoretical model which describes the way in which individuals respond to the introduction of new ideas and programs in the institutions in which they work. This model was introduced at the NAPSET orientation meeting and interested Sam, who saw some members of his staff excited and motivated with regard to using technology, while others were clearly uninterested or even resistant. There was little indication, however, that other planning team members were really interested in the problem, and feedback suggested that at least some of them felt that this was not the best use of time. The presentation was too theoretical for what was clearly an action-focused group; moreover, it focused on a problem which some, at least, felt was irrelevant. They did not see the need to convince others to use the technology. They felt the best way to develop interest was to demonstrate success.

During the second day of the workshop Ray presented the software evaluation workshop developed by the NAPSET staff. He demonstrated some simulation and problem solving software to give participants a sense of the range of available software beyond drill and practice. The afternoon session was a hands-on session in which participants were able to use some of the software, and practice doing some evaluation. Ray also presented information on locating sofware reviews, emphasizing that this is only an initial step and does not preclude the necessity of an inhouse review prior to purchase.

The hands-on session went well as it was accessible to people at various levels of technological sophistication. For beginners it was a chance to play with some software, and learn something of the range available; for more sophisticated users, learning to evaluate software systematically, with an eye to the needs of special education students, was clearly appropriate.

Implementation

Although participants generally expressed satisfaction with Ray's two-day workshop in Hollis, there was little follow through in terms of implementation of new practices. One planning team member said she planned to incorporate some of the information on data management, telecommunciations, and word processing into a course she is team teaching in the fall. The course is on basic computer use and will include both special education and general education students at the high school. The course, itself, however, was planned prior to the NAPSET workshop.

The Hollis planning team did not meet again after the workshop. Other priorities have interfered, particularly a struggle over raising the county millage. Moreover, because of a scheduling conflict, Sam was unable to attend Ray's funding workshop at the I.S.D. He did not feel it appropriate to send someone in his place, thus Hollis missed one piece of the technical assistance others found quite useful.

Although Hollis made some progress in special education technology during the year simply by establishing a LPT and holding the two-day in-service, they were frustrated by the small percentage of Ray's time they could call their own. Following the workshop, they needed additional assistance from Ray with regard to implementation. The workshop gave them ideas but did not provide them with a strategy for making concrete changes in their program.

Some changes were already taking place in Hollis prior to the arrival of NAPSET but were given further impetus by the project. For example, at the elementary level there has been an increasing emphasis on word processing. Ray encouraged the NAPSET team also to begin thinking about this direction, and a purchase of printers has now been made a priority. In addition, Sam had been dissatisfied with the Atari computers for some time but had been unable to figure out a way to switch to Apples. NAPSET provided impetus to push harder for that change. Sam hoped that in the second year Ray would provide assistance in designing a purchasing plan that would be less haphazard than what has happened in the past. Moreover, Ray's "expertise" may provide the extra weight necessary to convince Sam's superiors that Apple's are the way to go.

Hollis is also participating in the I.S.D.'s Special Education Computing Coordinators Committee. They see this as one of the most important spin-offs of NAPSET, since it will help with providing information about successful programs and give teachers a place to go when they have specific questions. Of course, teachers could have gone to the I.S.D. before, but the committee gives legitimacy to the needs of special educators in this area and establishes a direct link to the I.S.D. with its abundant resources. NAPSET, we should note, was crucial in establishing stronger ties to the I.S.D. in all four of the participating LEAs.

Factors Affecting Implementation

Hollis' failure to move forward with implementation of concrete changes can be attributed to several factors, the most critical of which was probably the decision by the Oswego Schools' cross-district team to divide up the technical assistance between the four participating LEAs. Although Hollis had a dynamic team and administrative support, with only limited time to work with Ray, Hollis focused all of its attention on acquiring information and training, as opposed to thinking about planning and implementation. Essentially Ray provided a one-shot in-service, without the team having established a concrete set of goals and plans for integrating that information into practice. This was in part because the CAA, drafted jointly by all four districts, took a slightly different form from other NAPSET district CAA's. While other sites had to clearly define goals and activities to take place throughout the year, Hollis (and the other I.S.D. LEAs) only had to define what would take place in their district during a two day in-service. Their long term goals thus did not have to be tied to a series of activities that would lead to full

implementation. Consequently, following the workshop there was a vacuum; no one had considered next steps. They had not realized that the workshop would not provide the "perfect piece of software," or the "perfectly designed program" that would resolve all their problems. Hollis is a perfect example of NAPSET's own adage, "one-shot trainings are not enough to make the computer work for you." It takes much more time and focused planning to integrate computers into the classroom, and a technical assistant cannot simply provide ready-made solutions.

Year Two Update

Hollis' difficulties in the first project year centered around a failure to galvanize its LPT into an organized and directed group of change agents. In part, it seems, because their liaison could not spend enough time on site to promote a sense of team responsibility and commitment, the LPT never developed into an effective working unit. Most of Ray's contact in Hollis was with the Director of Special Education Sam Godin, and this pattern continued into the second year as well.

It is not clear whether Sam convened the Hollis LPT in the second year or not. He seemed more interested in working directly with Ray than in trying to resurrect a team disgruntled by its failure to achieve many of its first year goals. Ray made one visit to Hollis in the fall of 1986, to discuss with Sam the idea of developing a document which outlined recommendations for upgrading the computer resources in the special education department. Sam's notion was for Ray to write a set of "professional recommendations," which would include the rationale and justification for some additional purchases, and which he could use to support his equipment requests. Ray drafted a document which included a description of current computer use in special education in Hollis, and recommendations for strategic purchases that would improve the computer program. Sam was very pleased with the document, and planned to use it in precisely the way he had intended.

Presumably he has done this, given his previous year's record of accomplishments. However, he was promoted mid-year to principal in one of the district schools, and Ray did not hear from him again after that. No formal CAA was written for Hollis in the second year, and technical assistance was limited to the drafting of this document of professional recommendations.

FAIRLEIGH

Local District Context

External Factors

Fairleigh, one of Oswego Schools' wealthier districts, is a large upper middle class suburb. Although primarily an all white professional community, Fairleigh is growing in ethnic and cultural diversity. A recent influx of Arabs has for the first time made bilingual education an important issue in the Fairleigh Schools.

Fairleigh is the home of many of the region's auto industry executives, as well as many of the area professionals -- doctors, lawyers, educators, etc. As executives and professionals, Fairleigh's residents were to a great extent shielded from the state's most recent economic recession. Unlike Hollis, Fairleigh's tax base has remained strong over the past decade. The schools, rich in resources and well-supported by the community, reflect the strength of the city's financial base.

The Fairleigh community has remained loyal supporters of their schools even as the school age population has declined. Less than one-half of the local taxpayers have children in school; nevertheless, a millage renewal was easily passed last year. The School Board has an excellent relationship with the administrative and teaching staffs, and there has not even been the threat of a strike in over ten years.

As part of the Oswego Intermediate School District, Fairleigh runs six center programs for the county's low incidence special education populations. These programs are run by the local district on a contract basis for the I.S.D. The center programs include the Fairleigh Training Center for trainable mentally impaired students; Riverdale for the severely mentally impaired; Boys Town for emotionally impaired boys living in state institutions and juvenile homes; a program for the physically handicapped; and two programs for pre-schoolers. Fairleigh's Special Services Director, Gunther Loew, and the staff of center programs dealing with physically handicapped or language impaired students are fairly well acquainted with the I.S.D. and the services it offers. The general education and high incidence special education staff, however, have had little contact with the I.S.D. Although no one was antagonistic toward the I.S.D., the district did not seem to have taken full advantage of the resources offered, particularly in the area of technology.

Internal Factors

Special Education Program

Approximately 10,527 students attend the Fairleigh schools; of these, 1,325 are special education students (12.5%). General education and high incidence students are served by eleven elementary schools, four middle schools, and three high schools.

Five of the six center programs are housed in separate buildings; physically handicapped students attend separate classes in three of the regular school buildings.

Fairleigh employs close to 700 teachers; approximately 100 of these are special educators. Another 30 or so social workers, psychologists, therapists, and counselors are also part of the special education staff. One hundred nine (109) paraprofessionals assist teachers in various classroom settings. High incidence students are served in both resource rooms and self-contained classrooms, with resource rooms outnumbering self-contained classes by about two to one.

The Director of Special Services for Fairleigh, Gunther Loew, is a well-respected, powerful figure within the school district. As Special Services Director Gunther is normally one of four assistant superintendents; however, during the 1984-85 school year he was appointed Acting Superintendent.

The Special Services Department includes the special education, reading, and gifted programs. Five supervisors, who report directly to Gunther, manage the various special education programs: high incidence, physically impaired, severely mentally impaired, trainable mentally impaired, and pre-school. Diane Hawley, the NAPSET coordinator for Fairleigh, acted as a special education technical assistant in the district. Her position, funded by a special grant, is essentially designed as a liaison position between general education and special education. The high incidence supervisor, Mary Jo Angelis, is Diane's direct supervisor.

The kind of work Diane does is indicative of the support which special education receives in Fairleigh. Over the last three years her position has been used to promote a better understanding of special education among the general education staff. Every staff person in the district was given a half-day of release time to attend an inservice session on how special education students are identified, tested, and placed in appropriate programs. Although there are still frustrations and problems, there is now a much more supportive and collegial attitude among special ed and general ed teachers. Debbie continues to do inservices, and acts as a troubleshooter throughout the district.

Innovation

Although not a highly innovative district, Fairleigh did seem amenable to change when it was embarked upon with some degree of caution. The district was fond of implementing pilot tests prior to making any dramatic changes in curriculum or instruction. Recently they had begun exploring the possibility of introducting cable T.V. at the high school. As with most new ideas and projects, a committee was set up to explore the issue both in terms of its educational value and of the logistical and political problems involved. Rather than asking for everything at once, the committee recommended hiring a telecommunications coordinator who would both teach courses and help with the design of a studio.

The position was approved, so now the committee is investigating the ins and outs of becoming a cable network station.

The biggest problem for Fairleigh with regard to innovation has been a lack of follow through. Although front end planning has often been good, and approval of the school board easily achieved, there has tended to be little support for teachers or evaluation following implementation. Consequently, innovations have not always been sustained and institutionalized, particularly in the classroom context.

Technology in the District

As the above discussion of telecommunications suggests, Fairleigh is a resource rich district which had already invested considerable funds in technology. Close to three hundred microcomputers were now in use across the district. Of these approximately half are Commodores, another third are Apples, and the rest TRS-80's.

Robert Stern, a high school math teacher who took an early interest in the use of microcomputers, became Fairleigh's district computer coordinator a few years ago. Initially the position was only part-time, but during the 1984-85 school year he became the full-time coordinator. As the district's computer coordinator Bob repairs equipment, schedules and runs inservice trainings, and chairs two committees -- a district wide administrative committee, which makes purchasing decisions, and a teachers' committee that is primarily concerned with curriculum. The latter committee has developed a district computer curriculum guide, which sets out a series of goals and grade-level activities primarily designed to promote computer awarness.

Although teachers have not been given release time by the Fairleigh Schools to learn computer skills, they have been offered a whole series of inservice trainings during after school hours and in the summers. A few have also taken advantage of some of the training offered through I.S.D., local colleges and universities. Bob offers a broad range of after school inservices ranging from how to operate an Apple or a Commodore, to sessions on Logo, word processing, and even how to manage one computer with 30 kids.

Growth of the computer program in Fairleigh has been somewhat haphazard, particularly at the elementary level.* Teachers have not been required to participate in trainings or to use computers in their classrooms; consequently, knowledge and skill varies significantly and it is not always clear who is doing what in the classroom. Moreover, since the micros are most often kept on carts in the library, teachers must borrow them each time they wish to do a lesson. This type of arrangement does not encourage integrated use of the computer in daily lesson planning.

*The secondary computer program, just as in Hollis, is focused on literacy and programming and has little relevance to the special education program.

Special elementary programs such as reading and gifted have been assigned their own hardware and software; thus, they use it much more regularly than the general population. The reading program, a supplementary general education program, has been using micros for some time now and the teachers have their own software lending system. Beginning this year, general education resource rooms are being pilot tested at the elementary level as an expansion of the reading program. These labs will all have micros, and will be places for general education students to receive extra help in reading and language arts, as well as math skills.

For those teachers who are not part of the reading program, Bob provides a wide range of MECC and public domain software which teachers can review prior to buying their own. Elementary teachers are using a wide variety of drill and practice and tutorial software, as well as word processing and even some LOGO. In some buildings, in addition to teachers buying their own software, building computer committees buy and distribute software with funds provided by the district-wide purchasing committee.

Special education, particularly in the high incidence programs, has seriously lagged behind general education in the introduction of technology. Eighteen Apple microcomputers have been bought by the special services department, but only about one-half of these were distributed to special education classrooms (others went to the gifted and reading programs). Although special education has had representatives on the district-wide computer committees, and has access to hardware and software available to general education, there has been no planning or training directed exclusively at special education. Only those teachers who expressed an interest and took some initiative on their own have really begun using the microcomputers as an instructional tool.

The center programs have moved forward with the use of technology more quickly than the high incidence program. At Riverdale, the facility for severely mentally impaired, teachers have been experimenting with toy switches and the use of a microcomputer to teach cause and effect. The Training Center now has six Apples, and various adaptive devices including large print screens, voice synthesizers, and varied keyboards. Even in these schools, however, it is up to the teacher to take the initiative to use the equipment. Those who have, have often made great strides.

In one classroom in the Boys Town program students are using two Apple computers every day for math, as well as for some BASIC programming. When they finish their work they are allowed to play arcade games. Catherine Morse, the teacher in this room, finds that the computers provide increased motivation and are terrific instructional tools. She feels that even the arcade games are instructional, as these are skills that these boys need to compete with their peers outside of school. Catherine recently acquired two more Apple computers through a grant she was awarded to teach language arts skills. It is the rare teacher who takes this kind of initiative, taking the time to apply for a special grant to promote new forms of learning in her classroom.

NAPSET Technical Assistance

Chronology of Significant Events

October 14-16: Orientation Meeting, Danvers.

October 24: Planning team to discuss Technology Implementation Profile.

November 15: Planning team meets to evaluate TIP, and develop a set of goals. Sent information to NAPSET liaison.

December: Coordinator attended cross-district team meeting to develop tentative CAA.

January 28: Planning team meets to discuss district needs and upcoming visit of NAPSET liaison.

February 5: Case study researcher visits district, interviews team coordinator and some planning team members.

February 7: NAPSET Liaison meets with cross-district team in morning; meets with Fairleigh team in afternoon.

February 19: NAPSET liaison sends CAA back to district for signatures.

March: Monthly team meeting to discuss direction; coordinator also meets with Nick Powers and Mark Sutton at the I.S.D. to discuss appropriate focus for Fairleigh team.

March 28-29: Coordinator attends software evaluation workshop presented by NAPSET liaison in Hollis; meeting between coordinator and liaison for an hour following workshop.

April: Team meets to share information and show NAPSET technology awareness slide show; learns that they will receive a second year of assistance.

May 8-9: Planning team members attend two-day workshop on adaptive devices presented by NAPSET liaison in Williamston.

May 20: Planning team meeting.

May 23: Fairleigh representative attends funding workshop at Oswego Schools; discusses idea for a grant to fund model independent living environment for young adults with NAPSET liaison.

Local Planning Team

The NAPSET project in Fairleigh was initiated by Gunther Loew, Dirctor of Special Services, but soon fell to Diane Hawley, a non-teaching special education consultant. Although Gunther attended the initial meetings with Nick Powers and Mark Sutton at the I.S.D. in order to plan the joint I.S.D. application, he was forced to step out of the process when he became acting superintendent of the district. Gunther had already asked Diane to represent special education on a number of district committees; thus, she was not surprised when the coordination of the NAPSET team fell to her as well.

Diane attended the October orientation meeting, and participated freely and openly in the cross-district team's initial meeting with Ray. Although not yet very knowledgeable about technology, she seemed enthusiastic and ready to learn. As a consultant in her own district, she had a broad understanding of special education services in Fairleigh, even if she was not fully aware of the role of technology in providing those services.

Diane returned to Fairleigh ready to set up her team and to begin the needs assessment process proposed at the NAPSET orientation meeting. According to the original cross-district plan, Fairleigh was to focus on physically handicapped and emotionally impaired students. Fairleigh ran center programs in both these areas, and Diane knew of teachers using microcomputers and other technologies in their classrooms. She asked these teachers, Kitty Nathanson from the elementary POHI program and Catherine Morse from Boys Town, to participate on the team. In order to get wide district representation, she also asked one teacher from each of the other center programs (with the exception of the pre-school programs) and one teacher from the middle school and high school high incidence programs to participate. Bob Stern, the district computer coordinator, was also invited, as was Mary Jo Angelis, supervisor of the high incidence program. Gunther, as Director of Special Services, was nominally considered a member of the team but was not expected to actually participate in meetings.

Development of the CAA

The size and diversity of the planning team proved to be problematic as the NAPSET project got underway in Fairleigh. Initially, using the Technology Implementation Profile provided by the NAPSET project, the team was able to develop a set of broad but reasonable goals. Nonetheless, as they began to hash out their needs more concretely, the varied interests of team members came into conflict. Lacking clear direction and leadership, the team floundered, unable to set clear priorities.

The initial set of goals the team developed went far beyond the POHI/EI focus Fairleigh was assigned at the initial cross-district meeting. As mentioned early, these "disability foci" turned out to be impractical and never really provided direction for any of the participating districts.

Following their needs assessment, the Fairleigh team laid out five primary objectives:

1) Develop a network for idea exhange and information dissemination throughout the district.

2) Increase awareness of existing district, county and national resources related to special education technology.

3) Develop a rational for hardware and software selection congruent with district goals and objectives.

4) Develop a model for microcomputer use that is congruent with curriculum goals.

5) Organize a system for the acquisition of funds for the purpose of technology for the handicapped.

These goals were translated into the following areas for the cross-district CAA:

1) The development of a district statement of philosophy to guide purchasing decisions.

2) Technology awareness training for the Board of Education and building administrators.

3) Inservice training for teachers with different levels of sophistication.

4) Development of a rationale and strategies for curriculum integration.

5) Funding.

Although overlapping with the needs of other districts, these goals certainly provided Fairleigh with a blueprint for beginning the planning process. Clearly a statement of philosophy and a plan which would include inservice training and curriculum goals was in order.

The Fairleigh planning team met with Ray during his February visit. Diane invited planning team members to bring one other interested colleague to this meeting; thus, 15-20 people attended. The large number of people made it difficult to begin prioritizing needs for Ray's subsequent visits. Rather, everyone began throwing out informational concerns in the hopes that Ray could answer specific technical and software questions. Ray, noting that he could provide this information, tried to focus the discussion on broader issues which had been raised concerning areas such as curriculum integration, and teachers resisting the introduction of technology. Kitty Nathanson, a planning team

member, saw the latter issues as particularly significant, feeling that some kids were missing out because teachers were refusing to use the technology available. Ray suggested one thing he could provide, not mentioned in Fairleigh's original plan for technical assistance, was a workshop on introducing innovations and the change process.

Kitty also raised the question of a curriculum -- should the team write a computer curriculum for special education? Ray suggested that a curriculum might not be necessary, but certainly a set of goals was essential. He then asked if there was a set of goals for the school district, and suggested that these might apply to special education students as well as general education.

This statement caused some serious tension -- Mary Jo Angelis, the only administrator present, feared Ray was suggesting that they push the equity issue far beyond its "political" limits. Ray was trying to point out that broad goal statements, when accepted by the school board, are very useful in arguing for specific purchases, as well as innovations in instructional technique and curriculum. This topic, however, had to be dropped temporarily in order to clear the air.

Center teachers attending this meeting were primarily concerned with adaptive devices. They saw the use of technology as the means of restoring "normal functioning" for many of their students. Many of these teachers were already using a variety of adaptive devices; thus, they had more informational questions for Ray and were generally more outspoken than the high incidence teachers. Mary Jo, in order to move the conversation away from the curriculum issue, which she found threatening, suggested that adaptation and augmentation was the area of real concern and the direction in which the team should move. She argued that they could gather information on software and curriculum issues themselves, but that augmentation was more complex. "Philosophy," she said, "can come later; for now, we should focus on those students who have lost function and need something supplemental."

This tension between curriculum planning and augmentation was not resolved at this meeting. Although on the surface there seemed to be a consensus emerging, in reality those who favored the planning and curriculum integration strategy were quieted rather than swayed by this discussion.

Trying to resolve the tension, Ray suggested a compromise plan when he submitted his plan for on-site visits to the Oswego Intermediate School District. As originally suggested, Fairleigh was to receive two days of technical assistance. Ray suggested that if adaptive devices was to be a primary focus, the team should begin by contacting Project ACCESS at the I.S.D., and Emma Kruger from the I.S.D.'s Communications Enhancement Center. The I.S.D., Ray believed, could provide much of the information the team required.

Pushing the NAPSET approach to innovation -- planning and implementation -- Ray also proposed that the LPT "reconvene and identify one or two priority areas" on which to focus their energy over the year. He then suggested that the team develop a "position statement on the use of technology for and by special needs students" and look at "the implications of that statement for the district both in terms of the acquisition of equipment and the development of staff skills for the full and appropriate utilization of that equipment." One day of Ray's time in the district would then be spent helping to draft this statement, and the second day would be left open so that the team could decide the best use of his time in relation to the statement they had generated.

The February meeting in Fairleigh was frustrating for everyone involved. Many of those who attended the planning team meeting expected Ray to have information at his fingertips that would resolve all their problems. Many were already using equipment available through the I.S.D., and did not really believe that the I.S.D. could provide the most up-to-date information. Those not interested in adaptive devices were frustrated when the focus was switched away from their more mundane, but equally valid concerns.

Recognizing that Fairleigh needed more direction and focus, Nick and Mark met with Diane in early March to discuss the CAA. Without trying to push the team in one direction or the other, they attempted to make it clear to Diane that as the team coordinator she would have to take some leadership in resolving the tensions and moving the team forward. Diane, recognizing that the center programs were pushing the team in a direction too narrow to resolve many of the critical issues before them, suggested breaking down into task forces. Unfortunately, lacking strong leadership and direction, these task forces were not any more productive than the team as a whole.

Ray did not return to Fairleigh again during the 1984-85 school year. Although the Fairleigh team met monthly following his visit, they were never able to agree upon a focus and design an technical assistance strategy that was satisfactory. In part, it appeared that the team just did not know how to go about using a consultant. Seeing a number of things provided in other districts, they seemed unable to decide what services Ray could specifically offer to them.

Fairleigh representatives did attend all of the inservice trainings and work-shops Ray provided in other districts. At the end of March, Diane attended the software review evaluation workshop in Hollis, and spent some time with Ray following the meeting. In May, planning team members associated with the centers attended the session in Williamston devoted to adaptive devices. A grant writer from the Special Services Department was present at the funding workshop offered at the I.S.D. and was very excited about some of the ideas Ray put forward. She left Ray's

workshop ready to move ahead on a project she had long been interested in -- a grant which would provide funding for an independent living environment for young adults. Unfortunately this project was not given administrative support for the coming year, and thus has not come to fruition.

Implementation

As the above discussion suggests, the Fairleigh LPT was not very successful in establishing itself as a planning team. Although the team met monthly following Ray's initial visit in February, they were never able to choose a focus and move forward in a single direction. This was due in part to the composition of the team, and in part to lack of strong leadership, direction, and authority on the part of the team coordinator. Although Diane was enthusiastic and genuinely interested in the NAPSET project, she lacked the power and authority necessary to convince the team to maintain a broad focus inclusive of the concerns of center teachers but not exclusive of the district's planning needs. Moreover, since the one administrator on the team, Mary Jo Angelis, pretty much squashed the impetus toward developing a philosophical statement and curriculum rationale, those who favored this approach were stifled.

Implementation of the CAA

Although scattered and unfocused, the Fairleigh team did accomplish some of the goals it set for itself during the team's earliest meetings. Meeting monthly the LPT was able to share information that individual members acquired either through Ray's various workshops or from the I.S.D. For example, having acquired information through Project ACCESS, the team has become interested in their data management disc. Project ACCESS may present a fall inservice on how to use the data disc.

In the attempt to pursue more information on adaptive devices, the team spent part of their April monthly meeting viewing NAPSET's special education technology slide show. (They also arranged a hands-on session with the I.S.D.'s communication enhancement specialist, Emma Krueger, but this fell through and was never rescheduled.) High incidence teachers who had had little exposure to adaptive devices were dumbfounded by the slide show; however, the low incidence teachers who were looking for something exciting and new, realized they were in fact familiar with most of what was available. This led to greater frustration on their part, as they recognized there were no pat answers. Moreover, already familiar with the equipment, they could not think of ways to use Ray's time. Ray certainly could have offered assistance in thinking about appropriate uses of the technology available, or designing plans for the systematic acquisition of hardware in the future, but no one seemed to think that such a direction was appropriate or necessary.

Following up on Ray's suggestion that the LPT write a position paper beginning with a statement of philosophy, the team issued the following statement:

> We encourage the appropriate use of technology as a tool to enhance academic and vocational learning, social skills and quality of life.

This statement was clearly designed not to ruffle anyone's feathers. It certainly was not strong or detailed enough to provide a guide for the development of concrete policy decisions with regard to either the acquisition of hardware and software or the implementation of a computer curriculum.

The NAPSET project, simply by its existence and by the existence of the LPT, gave a certain legitimacy to the needs of Fairleigh's special educators vis-a-vis technology. Consequently when the team requested funds for special education software, $1500 of the budget was set aside specifically for this purpose. It remains to be seen how actual purchasing decisions with regard to new software will be made. The NAPSET project also provided impetus for designing a special education software lending library, something that had been talked about prior to NAPSET but never instituted. Such a system is now operating out of the media center where the NAPSET coordinators office is located.

Outcomes

Although Fairleigh can hardly be called an outstanding success story, there has been some forward momentum created by the NAPSET project. The LPT, perhaps not the most effective body, has nonetheless met monthly to share information concerning the use of technology, and they have begun, at least minimally, to think about the future in a more systematic way. In particular, Riverdale, the center for the severely mentally impaired, has set up its own in-house computer committee; and, although temporarily on the back burner, a proposal has been floated for an exciting venture, the establishment of an independent living space for young adults.

NAPSET has also contributed the renewal and strengthening of ties to the I.S.D. Riverdale and the Fairleigh Training Center have realized that the Learning Assessment Clinic/Communication Enhancement Center at the I.S.D. has much to offer, in the way of both information and hardware. They have also realized that they can use their own knowledge to help the I.S.D. provide them with appropriate services. One means of institutionalizing this dialogue has been the newly formed Special Education Computing Coordinators Committee established through the I.S.D. In addition, the Fairleigh NAPSET team has tapped into the information resources provided by Project ACCESS, and is encouraging teachers to take advantage of the Project Access Data Disk for recordkeeping and management.

Although the LPT was unable to begin the task of longterm planning this year, Fairleigh did take advantage of the information provided in the various NAPSET workshops and trainings in other districts. Having attended the software review and evaluation session in Hollis, Fairleigh set up their own software lending system and even managed to acquire $1500 to purchase additional special education software. In addition, FTC teachers used information provided by Ray on "LINC" software identification services to acquire new single switch software for their program. Although these are only small steps, if they encourage teachers to experiment with a broader range of software, and to communicate with each other about their success or failure with these programs, they will have been worthwhile.

Factors Affecting Implementation

Fairleigh, like Hollis, suffered from the way in which NAPSET technical assistance was structured for the Intermediate School District. Had there been more attendance to their particular needs, Fairleigh might have been able to work out some of their internal team problems and develop a clearer sense of direction in which to move. Moreover, the ambiguity of being part of a larger project but focusing on individual district needs seemed to really throw the Fairleigh team. Not wanting to ask Ray to provide services already provided in other districts, they could not figure out what they specifially needed in their own district. Consequently they never took advantage of the two days of technical assistance allocated to them.

Fairleigh's problems, however, went far beyond those attributable to the structure of the technical assistance provided in Oswego County. In particular, the divided nature of the team and the lack of strong, authoritative leadership were critical factors. Although the team started out in the right direction, setting a quite reasonable set of goals with regard to purchasing hardware and software, and curriculum integration, they were side tracked by a group of vocal and powerful teachers with concrete informational needs. Moreover, the lack of strong administrative support for a planning and curriculum focus from the Director of Special Services, or his representative on the team, Mary Jo Angelis, squashed any attempts to move in this direction. Diane was afraid to take the initiative and move forward without consulting Gunther each step of the way and her team, recognizing this, did not feel that they, as a group, had the authority to make major changes. Consequently, the LPT focused on very concrete changes -- acquiring more software, establishing a lending system, acquiring more information on adaptive devices, etc., forsaking any attempts to implement a plan with a broader vision of the future of special education technology in Fairleigh Schools.

Year Two Update

The divisions which appeared on the Fairleigh LPT in the first project year were not resolved during the second year of assistance. They were sidestepped instead. While the entire LPT was notified about an initial meeting with Ray in January, 1986, only three team members plus Mark Sutton from the Oswego ISD showed up. Rather than trying to pull together a larger, more representative working group, these three -- Diane Hawley and two teachers from the Fairleigh Training Center -- determined to pursue their technology concerns on their own.

The agenda for this meeting was to include discussions about a district needs assessment in special education technology, the job description for a special ed technology coordinator, and funding sources for equipment purchases and program sponsorship. Discussion quickly focused on the proposal of a Training/Evaluation Center for Independent Living, however -- a transitional training center for severely handicapped kids. This was the revised version of a proposal which had been hatched the year before but met with some resistance in the district. The three team members were very enthusiastic about the plan, however, so Ray accepted it as the team's focus and went on to provide them with fund-raising information and strategies which could be used to generate support for the proposal. A game plan was established which included obtaining the superintendent's approval, then beginning the long task of identifying private foundation and associated agency support,

At this point, the ball was in Fairleigh's court -- the next several steps were their's to take. Ray met with team members one more time during the year when he was in the area working with another client district. This visit was devoted to discussing ways Fairleigh could be of assistance to neighboring districts requesting advice about special education technology, however. The outcome of the Independent Living Center is not clear. It is a major undertaking which will require very substantial support to get off the ground. Ray's prediction is that the three will not get the center they are working for, but that the effort will accrue other programmatic benefits for the district. Whatever happens will be the results of a few individuals' hard work, not a team effort, however.

Year Two at the I.S.D.

Ray also met with Mark Sutton at this I.S.D. during each of his three visits to Oswego County in Year Two. Mark's Special Education Computer Coordinator Committee continued to meet throughout the second year, and Mark was pushing for greater regional coordination of program development. Ray served as a sounding board for his ideas throughout the year; we provided feedback and advice, but no more substantive assistance.

NAPSET CASE STUDY:
"NORTHEAST" DEPARTMENT OF EDUCATIONAL AND CULTURAL SERVICES

State Context

External Factors

The "Northeast" Department of Educational and Cultural Services, Division of Special Education, was the only state agency that applied for and was selected to participate in the NAPSET project for the 1984-85 school year. Since one of the goals of the Division was to build linkages with districts within the state, three districts applied together with the N.D.E.C.S. Their participation was solicited by the Division to represent a broad geographic range in a rural and resource-poor state. The three School Administrative Districts (SADs) selected were: Howell (following the Orientation Meeting in October this district dropped out because the Special Ed Director found he had other more pressing responsibilities); Washington; and Bremen. The decision to include these districts as co-participants was based upon the belief that a flexible outreach effort for disseminating special education technology information to teachers, parents, the community, and local education agencies would receive more support and have more credibility than if it originated solely from the state education agency.

Internal Factors

"Northeast" is a rural, sparsely populated state with few economic resources. The total public school population as of 1984 was 207,839. There are 746 public schools (606 elementary, 100 secondary, and 40 that are combined elementary and secondary) staffed by 12,707 teachers. Private schools educate another 14,880 students. Per pupil expenditures are low; the cost per elementary student is $1,735.03 and $2,150.53 per secondary student. Special needs students comprise approximately 14% of the student population or 27,000 students; they receive instruction from about 1,400 teachers.

The Director of Special Education for the State Agency, Dan Stillman, supported the NAPSET project, which was spearheaded by Dora Brown, the Information Specialist for the Special Education Division. The Special Education Division, one of six divisions within the Bureau of Instruction, maintains responsibility for the oversight of all special education programs within the state. Because is a rural state and most LEAs have limited access to both information and professional development opportunities, the project focused on an outreach effort to bring information on technology to special education personnel throughout the state.

A survey conducted by the Information Specialist in November 1984 addressed the use of microcomputers in special education across the state. Its intent was to gather information on uses and applications of technology and to identify what percentage of

teachers and administrators were applying technology to special needs programs and data management. Initial results indicated a growing involvement with technology: 83% of the 165 surveys were returned by special education directors, and statistics indicated that 62.7% were using microcomputers with special needs students, although many districts were just beginning. Data gathered from this study precipitated the Division's attempt to demonstrate some leadership to LEAs in special education technology. This role was played out through the state's participation in NAPSET.

Resources allocated to support this endeavor included: reimbursement of expenses for all state planning team members; release time from responsibilities for the Information Specialist; and financial support for projects stemming from the activities of the planning team.

Technology in the Division

The Division of Special Education has few technology resources. Major applications are limited to word processing and telecommunications via SpecialNet. Dora Brown appears to be the sole user within the Division, and has the most expertise in actual operation of the equipment. There is only one personal computer available (TRS 80 III) and she is the only person to make use of its complete capabilities, particularly telecommunications. Tight budgets and a lack of support for purchasing equipment have prevented the Division from making progress toward internal data management. In the past, attempts have been made to purchase sophisticated professional computers but they have been thwarted due to the low priority afforded this area. The priorities identified by the Commissioner of Education, Richard Brisco, and the State Legislature in the recent Education Reform Act illustrate this point. The Act puts little emphasis on technology other than to stipulate that computer literacy must be a component of graduation requirements by 1988. This lack of interest in technology at the state level has prevented the Department of Special Education from making real progress toward automating its work. (Note: Because of this lack of support for technology, Dora Brown allocated monies from the Information Specialist budget to purchase two IBM microcomputers for the Division of Special Education. One is a 10 Megabyte Hard Disk and the other has two disk drives with 512K Memory. This equipment was delivered in July 1985.)

Innovation Within the State

"Northeast" has characteristically been a "status quo" SEA, hesitant to impose mandates upon local districts. The Division has informally taken the stance that "bottom-up" ownership of new projects/programs is the only way to insure successful innovation. Therefore, a grass-roots attitude toward change is perpetuated with regard to dissemination efforts and the emphasis is on helping districts help themselves. As one would expect, innovation is a slow process.

NAPSET Technical Assistance

Chronology of Events

September: Telephone contact with all original State Planning Team (SPT) members.

October 14-16: NAPSET Orientation Meeting, Danvers.

November: Telephone contact and telecommunications link established with N.D.E.C.S. to plan for SPT selection and first on-site.

November 29: First half-day on-site visit. Liaison engages team in goal-setting; SPT experiences confusion over goals and direction of project. Case study researcher present at this meeting.

December, January: Telephone contact and electronic mail used to communicate with SPT coordinator. Liaison participates in teleconference call with original SPT members on January 10; drafts Cooperative Assistance Agreement; sends material from information resource center in response to coordinator's request; assists in agenda planning for the January on-site visit.

January 17: Second on-site visit. Liaison presents CAA draft for review and discussion; facilitates analysis of informal survey results to prioritize information needs; assists in outlining components of planning guideline for special education technology.

January, February: Telephone contact and electronic mail communication with state coordinator. Liaison mails revised CAA on February 4; assists in planning February 25 SPT meeting; sends materials for SPT on group facilitation skills and planning guides; participates in teleconference call with Colleen, Peter, and Dora on February 15.

February 25: State Planning Team meeting: liaison sends SpecialNet message to demonstrate electronic mail capabilities and provide team with planning guide information.

March 18: Received signed CAA.

April, May: Telephone contact and electronic communication to plan agendas for on-site visits.

April 4: Third on-site visit. Liaison presents overview of NAPSET database; co-facilitates committees' work on planning guide and dissemination.

April 25: Fourth on-site visit. Liaison co-facilitates committees' work on planning guide and dissemination.

June 4: Fifth on-site visit. Liaison co-facilitates work sessions on draftingthe planning guide.

June: Liaison provides written feedback on planning guide to coordinator of the SPT. Electronic communication with N.D.E.C.S. to plan agenda for next on-site visit.

July 19: Sixth on-site visit. Dora details focus of continuation of NAPSET project for 1985-86. Liaison co-facilitates work session on planning guide. SPT passes guide to Dora for final revisions.

July: Electronic communication to discuss progress on guide. Liaison provides editorial comments to coordinator of SPT.

August 6: Two hour meeting with SPT coordinator to discuss guide and receive third draft of document.

August: Liaison forwards comments on guide via SpecialNet.

August 28-30: Second Orientation Meeting, Boston.

September 11: Seventh on-site visit. Liaison provides final review of planning guide.

NAPSET Orientation

The October NAPSET Orientation Meeting was attended by Dora Brown and Special Education Directors from each of the participating school districts. As a result of that meeting, the group enthusiastically adopted the idea of having a team whose first responsibility was planning. They decided team membership should include broader representation than just the Special Education Directors, and gave Dora primary responsibility for expanding the team. The group also decided to explore the idea of becoming, as a team, a state-wide NAPSET project: the team would develop guidelines to help LEAs plan for the application of technology in special education and as individuals, they would act in support roles to LEAs, similar to those provided for them by the NAPSET liaison. In addition, it was decided that one of the school districts -- Bremen -- would be a NAPSET LEA site, serving as a pilot site to test the viability of the local planning team concept and processes. Having Bremen as a "model" site would inform the development of planning guidelines and give the state team the experience of seeing an LEA go through the process.

Team Selection

In order to construct a diverse team, Dora Brown selected members who were active in their schools, represented business, community

and handicapped interests, and had varied experiences with and knowledge of technology. Members included:

- Colleen Pleck, Special Education Director, Washington.
- Peter Anthony, Special Education Director, Bremen.
- Mary Jane Evans, Volunteer Computer Coordinator and School Board Member, Jackson School District;
- Leo Greeley, Computer Consultant for M.D.E.C.S. for one year (taking a sabbatical from his role as a science teacher);
- Tim Jeffries, Special Education Teacher, Randolph District High School;
- Laura Gorman, Special Education Teacher, Willard Junior High School;
- Doug Traub, Bureau of Rehabilitation, N.D.E.C.S. (Doug only attended one meeting, and additional attempts to encourage his participation were fruitless);
- Don Krieger, Computer Consultant, N.D.E.C.S. (Don joined the team midway through the year); and
- Dora Brown, Information Specialist, N.D.E.C.S.

Background histories of each of the members indicate that Dora met her selection criteria. All of the individual team members were forerunners in technology use in their particular settings and had been instrumental in trying to disseminate their resources to colleagues. A diverse group of educators, intent on promoting the application of technology to special populations, the team provided direction to the State Education Agency. The majority of team members felt that the state should financially support local efforts without issuing formal guidelines or directives. In several respects, this belief limited the accomplishments of the state team, confining their role to that of "information broker," and further perpetuating the tradition of local autonomy.

First On-Site Meeting

C.G. Shaffer, NAPSET liaison, met with the State Planning Team in late November for the first on-site visit. The meeting was attended by all the new members, but only one original team member, Colleen Pleck. The purpose of this meeting was to inform state team members of the goals of the project (those identified in the appplication) and to identify team member's concerns regarding their involvement in the project. During the first half day (which C.G. did not attend) the team was oriented to the NAPSET process, and the goals set by the original team at the orientation meeting were explained to new members. During the afternoon session C.G. facilitated a discussion, which was intended to focus on two issues: priorities for technology and a

state dissemination effort. The discussion strayed far from the intended topics and instead resulted in revisiting and challenging the original goals set forth at the orientation meeting. Some clear power struggles were in evidence. A faction headed by Leo Greeley and supported by Tim Jeffries and Laura Gorman, the only teachers on the team, wanted to take action and forge ahead, disseminating information around the state without any prior planning. This was in direct opposition to Dora and C.G.'s approach, which mirrored both the decisions made by the team at the orientation meeting and the NAPSET approach in general. A long and difficult discussion ensued, throughout which the project's purpose, leadership, and the role of the team were all unclear. This confusion was due to several factors:

- Dora's reluctance to be directive, and to state (or reiterate) the agreed-upon direction;
- C.G.'s selection and use of a goal-setting exercise, which communicated to team members that goals were not yet formulated;
- Leo Greeley's dominating personality; his opinions about how to implement technology were diametrically opposed to those upon which the planning approach was based;
- The absence of members of the original team who had spent a long time reaching consensus on goals (Colleen Pleck, the # only original member, was silent, which appeared to be her style in such a group).

At the end of the team's struggle, they agreed to begin with a survey of technology needs in the state. They decided to informally interview practitioners to assess their needs in technology. A formal survey was vetoed on the grounds that it would delay progress -- prior approval from a Data-Acquisition Committee at N.D.E.C.S. was needed -- and because it was felt that school personnel were already inundated with too many questionnaires. A list of questions was brainstormed, however, to form the basis of the survey. The meeting concluded with the decision to have a teleconference call on December 10 to finalize the informal questionnaire and plan the second meeting of the State Planning Team.

Developing a Working Relationship

As a result of this first meeting, C.G. contacted Dora to set guidelines for NAPSET collaboration. First, there was the issue of how to work with the state and three school districts. C.G. felt it would be easier to work directly with Dora as the coordinator of the statewide team, rather than contacting all other three school district members each time information needed to be relayed. Dora agreed and accepted the role of coordinator. The issue of team leadership also surfaced during the conversation. Dora had hesitated to assume leadership at the first meeting, resulting in a challenge to her goals and those of

the Division. C.G. suggested that Dora should take a more directive role unless she wanted to abandon the initial project goals to the whims of the planning team. Dora agreed and solicited C.G.'s support in regard to facilitating meetings and organizing the newly identified goals to fit identified state and local needs.

At this juncture, a strong bond was formed between Dora and C.G., and their responsibilities were clarified. Addressing this issue early in the year helped to define the working relationship between the technical assistance (TA) provider and the coordinator of the state team. Their trusting relationship enabled C.G. to provide feedback on an ongoing basis to Dora, without concern for offending anyone on the team. As an insider, Dora could direct team members regarding tasks, etc., in ways which would have been unacceptable had C.G. taken on this role. As an outsider, C.G. was regarded with suspicion throughout the first several meetings. Planning team members challenged her role as consultant, because she was unfamiliar with the needs of the state and "how things got done around here." As the team evolved and members became more comfortable with C.G. and each other, this behavior decreased, however.

Additional Meetings

To accomplish the goals which the team had set for the year would have required frequent meetings; however, the geographical distance between the N.D.E.C.S. and the team members' districts prevented the team from actually meeting regularly. In addition, though most team members were released from the performance of their regular school duties to participate, those directly responsible for instruction of students often had difficulty leaving their classrooms. Because of these problems, only one meeting was held between liaison visits and Dora had difficulty facilitating the process.

The team had divided into subcommittees by task (one to develop a technology planning guide and the other to devise a plan for the dissemination effort). Dora enlisted the assistance of Colleen Pleck and Peter Anthony as facilitators, while she rotated between the committees. (Planning for this meeting had been done via a teleconference call between Dora, C.G., Peter, and Colleen.) Dora's evaluation of this meeting contributed to further refinement of the TA provider's role. She found it very difficult, if not impossible, to co-facilitate the committees, and Colleen and Peter did not have these skills. As a result, Dora chose to schedule meetings when C.G. could attend and assist her. Due to the nature of the tasks and the amount of work entailed in preparation for meetings, Dora and C.G. met during the late afternoon and evening prior to team meetings. These sessions covered agenda planning and strategizing tasks and activities; they also further increased Dora's reliance on C.G.'s input.

Lack of leadership on the "Northeast" Planning team had an obvious impact on the kind of technical assistance provided. As the year progressed, C.G. was providing not only information and group facilitation, but she was relied upon as a team member and placed in the position of performing work-related tasks along with other team members. In some respects, this cemented her relationship with the team, but it also created an over-reliance on her time and ability to perform specific tasks within the amount of time allocated for visits to this site.

Implementation of the CAA

Effectiveness of Local Planning Team

The original focus of the Special Education Division was reflected in the development of the Cooperative Assistance Agreement. Three areas surfaced as priorities for the year and each area was addressed in the CAA. The goals were: development and dissemination of a special education technology planning guide for use by local school districts within the state; development and pilot test of a model for districts to consider in implementing technology in special education; and development of a plan for the ongoing dissemination of special education technology information/resources from a state clearinghouse.

Because of the breadth of the goals and their diverse focus, the planning team decided to divide into subcommittees, one to develop the planning guide, the other to work on dissemination. Team members were allowed to participate in the committee of their choice. Interestingly, all the teachers joined the dissemination sub-committee, whereas the administrators joined the planning sub-committee. Whether this had any impact on team products is unknown, but it did affect the functioning of each committee. In order to have total group participation and encourage ownership of the goals, one team member, Peter Anthony, was asked to facilitate the work of the planning subcommittee. In turn, Colleen Pleck, who was most interested in tne dissemination effort, was asked to chair that subcommittee.

As a result of personal style, leadership qualities, and task orientation, the planning guide subcommittee forged ahead on their task, working cooperatively toward outlining the components of a planning guide for LEA use. Committee members listened to each other and formed general consensus on the format for the guide even though they sometimes disagreed on specific issues. They were task-oriented and were very productive during each of their meetings. Ultimately, their work was approved by the entire team and this served to reinforce their efforts.

The dissemination subcommittee floundered for the first several meetings, however, partly because of Colleen's ineffectual leadership and partly as a result of the resistance of members to carrying out tasks. They often wandered off on tangents, challenged the purpose of performing tasks or arguing about the

phrasing of sentences, and were generally low on productivity. Colleen, who is very quiet, was not capable of channelling their energies into a more productive direction, and required assistance from both Dora and C.G. Eventually, these factors resulted in her abdication of the role of chairperson.

Much of the conflict that ensued in the dissemination committee stemmed from one individual, Leo Greeley; however, he received support from two of the other members. His resistance to tasks appeared to be related to his perception of "how things worked in the state agency." During the April meeting Leo forcefully voiced opposition to continuing to work on committee tasks until he knew whether there was any financial support for their efforts. His resistance was transferred to other team members and it became necessary to focus on the conflict and address the primary concern they had. At this juncture Dora encouraged the team to draft proposals for financial support of the dissemination effort and said she would present them to Dan Stillman for approval, thus attempting to allay their concerns.

C.G. assisted the group in developing three proposals to present to the Division director. The work was slow. Few ideas were generated about what should be in each proposal. Prodding and questioning resulted in little input by the team. C.G. attempted to stimulate thought and ideas, but was not particularly successful. The members allowed C.G. to outline what should be included in a proposal and unwillingly agreed to write them. What was interesting about this particular meeting was Leo Greeley's negative leadership. His influence played a prominent part in the team's dysfunction, yet when the group accepted his opinion and refocused on his concerns, he had few ideas to share and lacked a real understanding of how to solicit support for the dissemination effort. Nonetheless, three alternate proposals were drafted and submitted to Donna for editing. She presented these to Dan Stillman prior to the April 25th team meeting, and the two of them identified resources that could be committed to this effort. The overriding decision to accept one proposal over the others was based on the desire to avoid duplicating efforts. As such, the group's initial idea to link resources with the State Resource Bank-Information Exchange was reaffirmed.

The Resource Bank-Information Exchange provides educators throughout the state with information on state resources (i.e., programs, people and materials). A toll free number allows educators to request searches from the Resource Bank, as well as to access information from other data bases such as ERIC, PSYCH INFO, ECER, SCISEARCH, Sociological Abstracts, and Magazine Index. The proposal suggested that special education technology information be entered into the database on Maine resources.

Once the issue of support for dissemination was resolved, the tasks for the team were more clearly defined. At the April meeting the dissemination committee prioritized the information needs collated from the informal survey conducted in January. (The priority areas were: hardware, software, resources,

education/other, with subcategories under each.) They also expanded a form used by the Resource Bank to describe resources so as to include data specific to special ed. In sharing their progress with the entire team, the subcommittee stressed the need to move this effort along by starting to gather resources for a database for input by August 1985. All members agreed to research and abstract 15 sources for input into the special education technology database. As forms were completed they would be sent to Dora for editing and entry into the database. Emphasis on accumulating classroom-based resources in the state in the priority areas was postponed until September since it was by him, state in the school year and difficult to gather data over the summer.

Having finalized the tasks of the dissemination subcommittee, attention turned to the completion of the planning guide. The general outline of the guide had been completed, shared with the entire team, revised on the basis of feedback, and finalized by the April 25th meeting. The decision reached at this meeting was to involve all members of the planning team in writing the first draft of the guide. After the outline was reviewed, each team member selected one section. There was hesitation on the part of two individuals to accept a section, and excuses were offered as to why they would not be able to complete it in time for the next meeting. Ensuing discussion led to the postponement of the next meeting for two weeks so that all members would have adequate time to prepare their draft.

The June meeting of the SPT consisted of a day-long work session to review the first draft of the guide. Leo Greeley did not attend, nor did he send his section for review (he had been contacted by Dora and offered assistance in writing it and although he finally completed it and submitted it to Dora, he did not attended any meetings after April). Team members used a form to evaluate each section.

By the end of the day, everyone was exhausted. Although the task was monumental given the amount of time available, the team had an overwhelming sense of accomplishment and pride in what they had managed to complete. Each individual who left this meeting had a clear direction and suggestions for redrafting their section. A meeting was scheduled for July 19 to review the second draft of the document. Team members were asked to send the revised section to Dora before the next meeting to enable her to copy them for distribution to all state planning team members. (The same procedure for review used in June would be followed at the July 19th meeting.)

Several events occurred to hamper further progress on the guide. Both Mary Jane Evans and Colleen Pleck announced they would be leaving the state. Both Leo Greeley and Laura Gorman discontinued their involvement in the planning team without informing Dora. As a result, one section of the guide, Staff Development, was incomplete. These individuals were often the most vocal champions of the need for a dissemination vehicle whereby LEAs could locate

and share resources, yet they put in the least amount of effort and work to accomplish this task. It seems that both saw their roles from the beginning as that of advisor rather than worker. Their negative attitude toward the tasks and their outspoken criticisms often delayed progress. Their absence from the last two meetings and their failure to complete tasks was indicative of their lack of investment in the project.

At the final July meeting of the team it was decided that Dora would make all the revisions and complete the guide. October was established as the target for disseminating the document.

During this meeting (at which five of the original eight members were present), Dora discussed the intention of the Division to participate in the NAPSET project for another year. She informed everyone that the goals for 1986-87 would shift toward internal applications of technology, as well as continuing to focus on the dissemination effort. Her intent at this juncture was to allow team members to consider whether they wished to be involved for a second year without having them commit themselves immediately. There was little discussion by the team members since most of them were tired. They were aware that their participation would be welcome, but that they were not obligated to participate for a second year. As of August, only oneindividual, Tim Jeffries, had expressed a desire to continue work on the project. He had demonstrated a strong commitment to the goals of the dissemination project and had abstracted approximately 30 resources for input into the technology database. His support, energy, and involvement had been unwavering since the decision was made to house the database at the Information Exchange. Additionally, he consistently produced quality work and was most helpful in serving as an active and committed member of the team.

Outcomes

As has been demonstrated throughout this report, the tasks undertaken by the State Planning Team were monumental given the number of meetings scheduled for the year. The team, with a few exceptions, a task-oriented group of individuals committed to helping others in the field. The majority of individuals were able to override their own personal goals for the benefit of the team. Most demonstrated their commitment by volunteering for additional responsibilities, agreeing to meet individually apart from scheduled meetings, and working judiciously on their section of the guide. Others did not have the same level of commitment, however, and impeded task completion. Time which could have been spent on work-related tasks was devoted to resolving conflicts and addressing issues that were often irrelevant to much of the material. Timelines were ignored, tasks left unfinished, only to be relegated to someone else, and a general lack of support and involvement on the part of two individuals hampered the completion of the guide. These factors contributed to Dora's frustration and caused her to assume more responsibility than had been originally

intended. In addition, C.G. was relied upon to provide more support and input into the performance of work-related tasks than should have been necessary.

Factors Affecting Implementation

Given the broad goals developed in the CAA, the state planning team made a valiant effort to achieve them, despite the fact that there were only six meetings during the year. The major factor influencing the ability of the team to implement its CAA was the lack of time to adequately address both a dissemination effort and a planning guide. As a result, the team's focus shifted to producing the guide for publication in the fall of 1985. The dissemination committee was recruited to assist in drafting the guide, another element which may have contributed to the fragmentation of the team. The shift of focus from dissemination to planning is confirmed by the limited number of abstracts completed by team members. The team had established a quota of 150 abstracts for beginning the dissemination of resources from the Information Exchange, feeling that this would be a sufficient number of resources for someone to conduct a search. At the end of the year, only 67 abstracts had been submitted and almost 45% of that total had been completed by one individual. This effort was also impeded by the lack of commitment demonstrated by two members of the subcommittee, neither of whom submitted any abstracts at all.

A second factor affecting the lack of movement on the dissemination project was timing. Since many of the initial decisions regarding the form it would take and its location were not reached until mid-April, there was little time before the close of school to begin accumulating resources. In addition abstracts had to be completed on team members' own time, something they were not always willing to do. All of these factors contributed to the fact that the team could not accomplish their goal of operationalizing the database by October 1985.

In summary, the goals and activities of the CAA were each addressed and are at varying degrees of completion. The enormous amount of work required by both the planning guide and the outreach effort served both to weaken the team's commitment and to discourage individual participation. In retrospect, it was unclear to everybody involved how much work would be required because the plan evolved and it was difficult to project workloads. Had there been an early awareness of this factor, the team might have rallied and approached the task somewhat differently (e.g., added members for particular areas of expertise, contracted with consultants or another agency to produce the guide, focused the CAA on only one area, or individual members may have stepped aside to allow others with stronger commitment and more time to serve in their stead).

As Dora had indicated to the State Planning Team in July, year two of NAPSET assistance focused on internal applications of technology in N.D.E.C.S.' Division of Special Education. First, however, there was work to be done to complete the first year's initiatives.

While Dora had given SPT members the option of continuing their involvement with the NAPSET project for a second year, she did not encourage it. The task of organizing a disparate group of local educators around a state-wide effort had proven to be a formidable task; in the end it was not clear whether it was the most productive use of everybody's time. In any case, in September no one was beating down Dora's door, demanding to be allowed to participate in the second year. This left the task of producing the planning guide to her and the NAPSET liaison. Work on the information database was never resumed.

After several drafts incorporating the comments of several readers, a bright red booklet entitled "Planning for the Use of Technology in Special Education: A Guide for Special Educators" was produced. The planning guide included chapters on the planning process, staff training, software, hardware, samples from special education computer plans produced in other NAPSET sites, and a significant appendix of available technology resources. After all the work that had gone into its production, it was an impressive document. Dora sent a copy of the planning guide to each special education director in the state, to identified special ed technology experts, and to several special ed departments outside the state which had requested copies.

To date no follow-up to the dissemination has occurred. Dora had planned to send a questionnaire to everyone who had received a copy of the planning guide, to find out if and how it was being used. So far this has not happened. It is not known what impact the planning guide has had on the state.

With the completion of the planning guide in December, Dora turned her attention to the application of technology within her own division. At the request of the State Director of Special Education and with the assistance of a program consultant, Dora conducted an extensive assessment of the activities and needs of the Division of Special Education, with the aim of determining how technology could improve its operations. She looked at what the division was doing, what it wanted to be doing, and how technology could simplify and/or facilitate its operations. Having recently acquired two IBM XTs, she wanted to develop some internal data management procedures which would both reduce the duplication of effort and organize the data collection and reporting procedures within the division. This goal, to evaluate, analyze, design, and implement applications of technology to internal processes within the Division of Special Education, was N.D.E.C.S.' single goal for

the second project year. Through a reorganization of their own operations, they hoped to serve the state's special education needs better.

C.G. provided assistance on several occasions throughout the year in the form of information, advice, and demonstrations of particular software applications; also with the drafting of a technology implementation plan, to be submitted for approval to the State Director of Special Education. This plan was approaching completion at the end of the second project year.

NAPSET CASE STUDY: BREMEN SCHOOL DISTRICT

District Context

The Bremen School District is located in a semi-rural part of the state. While less isolated than many areas in "Northeast", the only industry in the district is a large new aircraft engine plant located on the road into town. The town of Bremen consists of a dozen or more small stores, office buildings, and churches scattered over a quarter of a mile. While it is neither large nor busy, the town serves as the center of business for the residents inhabiting many square miles surrounding it.

The Bremen School District serves three towns: Lancaster, Bremen, and North Bremen. The Bremen District is the second largest school district in the state in terms of geographical area, yet it ranks about 20th in terms of school population. Nevertheless, it is a rapidly growing area and school enrollment has increased seven percent over the past few years. The Director of Special Education and coordinator of the NAPSET local planning team, Peter Anthony, attributed this growth to the short commute to two other New England states. Bremen now serves as a bedroom community for people employed in both states. This influx of new residents has resulted in severe overcrowding in all the schools in North Bremen and Bremen (for example, the high school was built to accommodate 250 students and presently has an enrollment of 450). The State Department of Education has identified Bremen as the number one priority in the state for new school construction, and construction is scheduled to begin on both a junior high and an elementary building in the fall of 1985. (The state funds 95% of all new school construction in the state.) Unfortunately, projected enrollment increases indicate that planned expansion will only temporarily alleviate the overcrowding. The additional space will not accommodate the continuing increase in enrollments, so the district has yet to overcome the problem of accommodating an ever-burgeoning school population.

Internal Factors

The total student population of the district is 2,600; of these 320, or approximately 12.5%, are receiving special education services. There are five elementary schools, one middle/junior high school, and one high school. The effects of overcrowding have had a drastic impact on education in these schools, as is evidenced by the need to hold some classes in trailers outside school buildings. There are a total of eight trailers located throughout the district. Not only are the trailers overcrowded (one of them houses three separate special education programs), they are also disorganized, vulnerable to vandalism, and they segregate special ed students from the mainstream. These conditions are not expected to be alleviated with the opening of the new schools in 1986-87.

The Bremen schools exhibit a great deal of the insistance on "local autonomy" that is prevalent throughout the state. There is

little coordinated planning between buildings, with principals "doing as they please" in their own schools. Each building, for example, has a different math and reading text and different report cards. As a result of this style of management, principals compete with each other for their part of the district budget, much of which is already allocated to the support of a traditional high school sports program. Overall, the Bremen school system appears to approach change with caution. Bremen's involvement in NAPSET, with its emphasis on coordinated planning, was viewed as a departure from the informal autonomous management style of the district. At one meeting Peter and Lou Miner, an early supporter of micro-computers in the classroom, both stated that the Superintendent and other district personnel were looking toward the special education project as an indicator of the potential for coordinated district-wide planning in the future.

Special Education Programs

All special education programs in Bremen are funded by the state (two years after expenses are incurred) at one hundred percent. This is indeed fortunate, as Bremen is a poor district with little or no local tax base. State funding both helps (in terms of the range of services offered) and hinders the district's provision of services: although all necessary services are supported, increases in expenditures must be covered for a two-year period out of local funds. The Bremen district as a whole receives 66% of its funding support from the state, up from 49.1% in 1981. This is indicative of the relative poverty of the area, as compared to districts in the southern part of the state which have more substantial local funding as a result of tourism.

Fifteen special education teachers and fifteen aides comprise the district's division of special education. The majority of special needs students are served in resource room programs. All buildings have a resource room staffed with a learning disabilities teacher and two classroom aides. The programs are non-categorical and serve Educable Mentally Retarded, Learning Disabled and Emotionally Disturbed students with mild to moderate handicaps. In addition, there are district-wide self-contained programs that serve students with more severe handicaps. For example, there is an elementary EMH class, an intermediate EMH class, a high school alternative program, an elementary ED class, and an elementary LD class.

Peter Anthony, the Director of Special Education, is an energetic, committed individual who has been in the district for three years. He taught in another district in the state before coming to Bremen. He had also been involved in a business venture with the director of special education in another district that provided special education data management for local area schools. The business partnership dissolved following the partner's departure to Alaska. Although Peter chose not to continue the business alone, his interest in technology did not wane. His eagerness to participate on the State Planning Team and to offer his time and energy in the state's "pilot site" were

evidence of his commitment to the implementation of technology in the Bremen school system and in the state. Administrative support for the pilot project fell entirely to Peter, although he had the commitment of the Superintendent, Per Jensen, and the School Board. Peter shares equal status with district building principals and answers to the Superintendent and the school board. This gives him a fair amount of latitude in the operation and management of special education services within the district. The special education budget is handled by Peter, although expenditures require final board approval. Peter indicated that he usually receives approval and did not feel that the allocation of resources for the NAPSET project would be hindered by the board. District support for his special ed endeavors was confirmed by the Superintendent during the first meeting in January with C.G. Shaffer, the NAPSET liaison. Mr. Jensen stated that if "he could assist the project in any way, to let him know." He seemed quite pleased that the Bremen School District had been selected to participate in the project and was eager to support Bremen's involvement.

Technology in the District

Technology in use in the Bremen schools is limited to microcomputers, and appears to have been implemented haphazardly: there was no planned, consistent introduction of machines into the district. Rather, it appears that individual "innovators" were responsible for the various projects that have been undertaken. Roger Gingrich, the principal at Bremen's Elementary School, provided the impetus and oversight for a computer lab located next to the administrative offices. In addition, he furnished instruction to students in programming, as well as instructing teachers in the use and programming of microcomputers. The lab consisted of several TRS-80s that Peter described as having been "purchased at a truck load sale one day" -- the inference being that their low cost was the sole determining factor in the purchasing decision. Peter's frustration regarding the choice of equipment focused on the lack of available, quality software for use by special needs students.

Lou Miner, another innovator and a math teacher at the Middle/Junior High School, was also responsible for the oversight of a TRS-80 lab located next to his classroom. Apparently, he had been an early proponent of microcomputer use and as such was viewed as an "in-house" expert by Peter. He was selected to be a member of the NAPSET Local Planning Team since he was viewed as having expertise and familiarity with microcomputers that others in the district did not have.

A third TRS-80 microcomputer lab was located at the high school. The focus of instruction was in science, math, and programming -- a fairly typical introduction to microcomputers in many schools. These uses of technology in the Bremen schools have resulted in limited access by the majority of students, particularly since the labs are so closely linked with science and math. Special needs

students have access only through mainstreaming, if at all, and the special ed teachers have had little, if any, exposure to microcomputers.

In terms of technological innovations for the handicapped in Bremen, Peter's sole focus was on microcomputer acquisition. He hoped to purchase microcomputers specifically for use in the special education division, to circumvent its dependency upon regular education computers for training and instruction. He had almost no interest in other equipment. He felt that the types of students served dictated this focus: i.e., either the students were so severely handicapped that few devices would help, or they were moderately disabled and could benefit from instruction via microcomputers.

Innovation in the District

In this district, limited resources and an increasing student enrollment have contributed to the "no frills" approach which Bremen has taken to education. Peter characterized the district as a "pretty good school system that looks at things, but moves slowly with regard to innovation." He felt that along a continuum, the district could be viewed as average with regard to innovativeness, but that it was not viewed that way by many people. In fact, Peter seemed to feel that many individuals saw the district in a negative light and felt that it was slow to change and implement new programs. As examples of innovativeness, Peter mentioned that the district had implemented a developmental kindergarten and hired elementary guidance counselors prior to the advent of this concept in many districts. Peter felt free to pursue grants or projects that were "unique" and believed he had the backing of the administration in his endeavors.

It seems likely that innovations in Bremen are slow to evolve and are contingent upon administrative support and commitment and the drive of individuals who promote them. They also seem to be promoted by one individual who assumes overall responsibility for "pushing the innovation through." There were aspects of this "top-down" implementation style that affected the NAPSET project.

NAPSET Technical Assistance

Chronology of Events

September: Telephone contact with North Bremen regarding NAPSET project.

October 14-16: NAPSET Orientation Meeting, Danvers.

November: Telephone contact to set agenda for first on-site visit. Liaison sends materials from information resource center on software for pre-reading students, software resource directories, funding through grants and foundations, word processing programs, applications of Logo to special education.

November 29: First half-day on-site visit. Liaison explains NAPSET project to LPT and reviews draft of CAA. Case study researcher present at this meeting.

December, January: Local Planning Team meets to review software evaluation forms; review CAA; discuss priority need areas; draft questionnaire on staff training needs; identify software in the district.

January 11: Second on-site visit. Liaison tours schools in Bremen and North Bremen; reviews and finalizes CAA; presents change model to LPT; discusses components of Bremen's special education technology plan.

January 25: Liaison sends materials from information resource center on adaptive devices and final CAA.

January 30: Liaison receives signed CAA.

February 4: Half-day inservice presentation by state Computer Consortium for all special education staff.

February, March: Liaison sends materials from the information resource center on computer literacy, model district plans, special education software reviews, reviews on IBM and Apple products. Telephone contact to set on-site visit and plan agenda.

March 28: Third on-site visit. Liaison assists in finalizing software evaluation form; identifying criteria for student and teacher literacy; reviewing and commenting on district plan.

June 19: Fourth on-site visit. Finalized district plan. LPT decides how to spend grant from N.S.D.E.C.S.

June, July, August: Special education teachers use microcomputers during the summer in preparation for fall implementation.

The first on-site visit by the NAPSET Liaison, C.G. Shaffer, was for a half day in November. It was intended as a brief overview of the project and it enabled the team to meet with the liaison for the first time. The team was comprised of four special education teachers, a junior high school math teacher (Lou Miner), and an elementary principal (Roger Gingrich). The only individuals with any technical expertise and knowledge were Lou and Roger, both of whom had been responsible for setting up computer labs in regular education. The four special education teachers had no exposure to computers or any other technology and were unaware of the impact technology could have on the instruction of students. Unfortunately, Lou attended only one half day session and Roger did not attend any meetings. Consequently, the only person with any technical knowledge was Peter, and he became the decision maker for the team, with the other members (all of whom worked directly under him) serving as a "rubber-stamp" committee. This is not to say that the team

members had no investment in the goals, only that they held back from active involvement because of their limited knowledge of the subject matter. They looked toward Peter to provide them with direction, answers, and decisions, rather than making decisions as a group.

C.G. drafted the Cooperative Assistance Agreement using information gathered from the District Profile and the original application form in conjunction with Peter's input. It was presented to the team during the second on-site visit and was accepted in its entirety. The three major goals for the year were: development of a district plan listing goals and objectives for implementing technology in special education during 1985-86; assessment of staff development needs and creation of a training plan; and evaluation of present assets to determine what additional resources would be required to implement the plan.

The team accomplished two of the three goals in the CAA. They focused their efforts on planning, with some implementation of their plans scheduled for the end of the year. The team met approximately once a month early in the year. However, it was obvious during the last two on-site visits that in the interim period no meetings had been convened. Work that could have been completed between visits had not been done, and consequently time had to be spent during the on-site visits reviewing and finalizing tasks.

Since Peter had developed most of the team's goals and had the most investment in the project, the team deferred to him in almost all matters. He was very directive and often spoke for other team members, as if he had consulted with them prior to reaching a decision. In attempting to facilitate several sessions C.G. was often over-ruled by Peter and occasionally reminded of the "local autonomy" of the school system. This was Peter's way of saying that the consultant was an outsider and so should refrain from being too directive. Given these messages, technical assistance was limited to what Peter requested and allowed, i.e., information gathering, planning assistance, some facilitation of group processes, and limited amounts of evaluation. Peter wished to control decision making and he accomplished this by selecting a "puppet team" that could not and would not challenge his authority.

Implementation

As was stated earlier, Peter was the driving force of this project. He invested a great amount of time and energy in accomplishing the goals identified in the CAA. Because of the constitution of the team and Peter's directive leadership style the collaborative nature of the LPT was never realized. Meetings were quite dull and lacked a true exchange of ideas and energy. At times team members appeared intimidated. Often they offered little or no input into the discussion.

There was only one meeting at which the team members showed any spirit and that was during an exchange on staff training. The

discussion revolved around the need for staff development for teachers unfamiliar with microcomputers. During the session C.G. inquired into the availability of district inservice days as potential slots for training. All four staff members broke into laughter simultaneously and commented that "there weren't any and that what was provided was worthless." Peter was embarrassed and attempted to defend the district's inservice efforts. He appeared to have taken these comments personally. He assured the team that part of the plan would focus on staff training and that he would allocate time and money to insure it. Rather than confront and resolve this conflict, team members wandered onto tangential topics regarding the types of training that might be beneficial for their needs. This was the only direct challenge to Peter's authority during any of the on-site visits. However, it was indicative of underlying discord and dissatisfaction and indicated that the needs of teachers were not generally considered in planning staff development activities. This factor could ultimately impede the successful implementation of technology into special education programs.

Although there were no changes in the CAA during the course of the project year, the original intent to plan one year and implement the next was altered by an event which catapulted the Local Planning Team into the third year of their plan.

The original Bremen plan had allocated $5,000 from the 1985-86 special education budget for the purchase of two microcomputer systems and educational software to be used in elementary resource rooms in Lancaster and North Bremen. The plan would have allowed teachers to use the systems over the summer before they had to incorporate them into their classrooms. A standard district inservice on microcomputers would have formed the core training available to these teachers if they had elected to take it.

At the mid-year point the State Department of Educational and Cultural Services announced the Innovative Education Grants, School-Based Innovative Projects, as part of the Education Reform Act of 1984. N.D.E.C.S. provided total funding for the grants at $500,000 for the first year (1984-85) and a million dollars for the second and subsequent years. The monies were "for competitive grants to be awarded to individual teachers, a group of teachers, a single school, or a group of schools for projects to promote creative improvement in the schools of the state."

Upon learning of this opportunity, Peter prepared and submitted an application, "Special Education Computers," during the first funding cycle. As it was not accepted for funding, Peter solicited input from Dora Brown, the coordinator of the State Planning Team. He revised the application based on her recommendations and resubmitted it during the second funding cycle. The grant was awarded and in June 1985 the Bremen Special Education Division was awarded approximately $10,000 for the purchase of microcomputer equipment and accompanying software.

The grant award allowed the district to purchase additional microcomputers on the condition that they conduct a study to measure the effects of microcomputer instruction with special needs students. Given that few teachers had used microcomputers with students prior to the end of the school year, the study is likely to present a challenge to the district.

The impact of this award was far-reaching; it shifted the team's entire focus away from planning and training to implementation. At this point the team seemed to stop functioning altogether. At the last on-site visit, in mid-June, there were only three planning team members present in addition to Peter, Diane Hanley, and C.G. The meeting started late and members appeared bored and lacked enthusiasm.

Peter chaired the meeting, following an agenda he had developed. His sole focus was on how to spend the money the district had been awarded. In preparation he had contacted local vendors and gathered data on prices, preview policies, and vendor support. His goal for this meeting was to have the team approve his recommendations regarding purchases. He presented the team with two options: either buy more equipment (9 CPUs, monitors and printers) and less software, or less equipment (7 units) and more software. There was some discussion of this issue but the questions were soon resolved; a decision was made to purchase less equipment.

During the discussion the issue of training staff in the use of this new equipment surfaced briefly, but it was relegated to the back burner. Peter's expressed intent was to "get something into the hands of teachers as soon as possible, let them have hands-on experience over the summer, and address staff training needs in the fall." This stance was a departure from the goal as defined in the CAA, which was to design a planned sequence of staff development activities prior to implementing the use of microcomputers with students. This resequencing was not challenged by the team nor was it acknowledged as anything other than a fait accompli.

Implementation of the CAA

In terms of the CAA, Bremen accomplished two of the three goals defined during the inception of this project. What was not really implemented was a collaborative, team approach to planning and decision making. Team functioning was poor, decisions were made by one individual, and it is possible that this may jeopardize widespread changes in instructional techniques via microcomputer use. However, at the end of the school year one of the team's teachers reported having learned much about computers and their application, and appreciated the opportunity to use the one computer that teachers had been passing around between them -- if just for a short time. Thus while the team process had not been implemented, a plan had been made (with teachers expressing some sense of accomplishment with that); computers had been purchased;

and at least lip service had been given to the prospects of staff training for fall. Whether implementation of appropriate classroom uses for the computers actually occurs remains to be seen.

Outcomes

Bremen made several advances vis-a-vis the use of technology during the 1984-85 school year. These include: microcomputers in ten classrooms; a plan for implementing the use of these and other computers; and a team whose members report that they are now more knowledgeable about computers. The plan and the fact that there is a team is attributable to Bremen's involvement in NAPSET. The grant, resulting in the purchase of the ten computers, probably would have been written regardless of NAPSET's involvement, given Peter Anthony's tendency to pursue such opportunities.

The major change in policy resulting from Bremen's participation in the project is a planful commitment to the purchase of microcomputers for all special education classrooms. Fiscal support has been secured for the continued purchase of hardware and software for the next three years. What is not guaranteed is a staff development progam, which may be the key to the successful implementation of technology in Bremen. This fact is particularly noteworthy given that this was an area of major concern to the team members, and indicated that Bremen had not as yet successfully met the training needs of teachers. Nonetheless, the opportunity to focus on computer acquisition -- given a grant from the state -- once again relegated inservice planning to "next on the list."

The fact that the microcomputers were delivered after school closed prevented first-hand observation of changes resulting from hands-on experience with microcomputers. Peter remarked on the excitement displayed by teachers as they learned to operate equipment and run software programs (this occurred during the distribution of the equipment over the summer). This behavior could be anticipated since most people respond fairly similarly when they first experience the excitement of learning how to operate a microcomputer. Whether this excitement endures may be dependent upon how successful teachers are in long-term use and integration of computers into their programs. A strong inservice program would appear to be a prerequisite.

Factors Affecting Implementation

Tne driving force behind this project has always been Peter Anthony. His support certainly is required for implementation, but much of the work has also been performed by him, a fact which is not conducive to building a team approach to change. True implementation of a collaborative approach to technology utilization in the Bremen Schools will hinge upon Peter's continued support and involvement, as well as his ability to use the services of the local planning team. If he follows the plan developed during the 1984-85 year, then the focus for the second

year will be on staff training. Plans were made and finalized at the end of June to conduct a needs assessment in the fall of 1985 to determine what skills and competencies teachers had with regard to microcomputer use. Inservice programs will be designed to address the skill areas identified in this evaluation instrument.

The NAPSET planning model was successfully transferred to the local planning team for use in the creation of a special education technology plan for Bremen. The resulting plan detailed a set of goals for a five year period. Adjustment of the plan resulted from the award of a $10,000 grant to the Division of Special Education. This award moved progress away from a planned approach to microcomputer acquisition since rapid purchasing decisions needed to be made. It was obvious that by not addressing the implementation phase of the plan, the district was ill-prepared to meet the immediate training need precipitated by the arrival of 10 microcomputers.

The stated intent from the beginning of the project was to provide training to teachers on microcomputer use. The training that was provided consisted of a brief introduction to assembling equipment, turning it on and loading a program (Peter provided the training when he distributed the microcomputers). Questions or problems that occurred were not addressed and teachers were left to "do the best they could with their limited knowledge." Peter's method of training was to allow them to use the equipment, assess their "competency" in the fall, and base future training on the skills they felt they were missing. At this point it is difficult to determine what impact this style of training will have on the successful implementation of microcomputers in Bremen. Additionally, successful completion of the study on the effectiveness of microcomputer use with special needs students may be hampered by insufficient teacher skill in the use of microcomputers.

Successful team functioning was thwarted by Peter's control of the team. Although he is not a technical expert in the area of microcomputers, he had more information than the other team members. "Information" allowed him to control decision-making during the first year of the project, as did his position of authority as Director of Special Ed. If individual team members' knowledge base increases, Peter will no longer be the "expert" with regard to technology. This -- and the active inclusion of team members other than his own teachers -- may cause him to be less directive and to encourage more participation and involvement in the decision making-process. It remains to be seen in the next school year whether Peter's directive leadership and the corresponding low team involvement will change as implementation unfolds, and whether such a change or lack thereof will really make a difference to successful implementation.

Year Two Update

Information on the second year of NAPSET activity in Bremen is sketchy at best, as team coordinator Peter Anthony discouraged visits from his district's liaison and offered few details about the work his team was doing. Peter had submitted a computer implementation plan to the State Planning Team coordinator Dora Brown and to his own liaison for comments in July. But the document was essentially a plan for his own activity over the next few years -- it did not require any upper administrator's approval -- and since he was less interested in rewriting than in getting on with things, the plan was never revised from its original state.

Peter did not attend the August 1985 Orientation Meeting; when contacted by his liaison in the fall, he reported being very busy just keeping the Special Education programs running smoothly. The district had experienced a significant increase in student enrollment; in addition, several veteran special ed teachers had left the district, so he was working with a corps of primarily inexperienced faculty. It sounded like the new teachers had enough to contend with without worrying about micro-computers. The district had offered one training workshop given by an Appleworks vendor; however, the district's software had not yet arrived so it was impossible for anyone to practice or start using the software they were introduced to. Another training workshop was planned for December; when Bremen's liaison offered to help plan or present at the workshop, her assistance was turned down and she was told, essentially, "Don't call us; we'll call you."

It seemed clear that Peter Anthony preferred to make his own way without any additional NAPSET assistance. His operating style clashed with the project's emphasis on collaboration and planning, and he seemed increasingly uncomfortable with his liaison's attempts to provide assistance. Because he was persistent and energetic he had made considerable progress toward incorporating new technology into his special education program during his association with NAPSET. His failure to establish an effective planning team meant that the success of the implementation plan depended almost entirely on him, however, and he seemed to be experiencing some of the drawbacks of that situation in the second year. He had clearly still not dealt adequately with the training issue, and had yet to demonstrate that the equipment he had been able to purchase was going to be put to effective use in the district.

VIGNETTE:
OXFORD TOWNSHIP SCHOOL DISTRICT

District Profile

Oxford is a middle class suburban community located on the east coast, just south of a major metropolitan area. There are approximately 4000 students in this K-12 district served by five school buildings. The district has made a strong commitment to the education of handicapped youngsters, who make up 6% of the total student population. Educationally handicapped students are served in the district in a variety of resource rooms and self-contained programs, although the emphasis is on strategic mainstreaming wherever possible. Each of the school buildings has one computer for special education use exclusively in addition to the equipment that is used in the regular education program. Thus students receive exposure to micro-computers in both the mainstream and in special programs. Most computer use in special education had been in the area of computer assisted instruction when the NAPSET project began, although there was a group in the process of developing instructional goals and objectives for IEP development, and there were plans to computerize these once they were complete.

Oxford Township School District offers a four year computer curriculum at the high school and each school building has at least one computer lab. Micro-computers have been used for instructional purposes in the district since 1979, and in 1983 Oxford was selected as one of 12 school districts identified for its exceptional implementation of computer assisted instruction in special education. (It was written up in a major Department of Education study of computer use in schools.) Of particular note was the fact that Oxford had provided 85% of its instructional staff with a minimum of 16 hours of computer literacy training. But while plenty of experimentation had taken place in the classroom, specific goals and objectives relating to micro-computer use had not been developed for the special education program. The district hoped that NAPSET would help them address that situation, and offered full support for the project, including release time, meeting space, materials and secretarial support.

The Local Planning Team

The two Oxford team coordinators were the District Coordinator of Special Services (the same woman who had made original application to the NAPSET project) and a high school special education resource room teacher and regular computer user. The rest of the team included another high school resource room teacher, two middle school resource room teachers, two elementary school resource room teachers, and a neurologically impaired classroom teacher. Since there were only nine full time special

education staff positions in the district, the local planning team consisted of almost the entire department.

While all team members had had some experience using microcomputers, none could be described as a computer champion. Indeed, when the liaison was asked midyear to speculate about the team's prospects for success, she noted that the absence of a computer champion and of a clear team leader could prove to be problematic unless team members rose to assume these roles. The Coordinator of Special Services, while capable, was distracted by other district priorities, and the high school resource room teacher did not exhibit obvious leadership skills. At the start of the project the team was somewhat uncohesive and lacked a clear vision of what it might accomplish.

Nevertheless, after considerable discussion with their liaison, the team came up with three appropriate priority need areas. These were:

- Develop goals and objectives that will help direct decision making for the uses of technology in the special education program in Oxford Township.
- Provide staff with the training needed to evaluate software with the purpose of matching software resources to instructional objectives in various curricula.
- Develop an organizational system for software acquisition that includes the identification, review, selection, purchase and distribution of instructional software for special education.

NAPSET Technical Assistance

Oxford's liaison made four day-long visits to the district; each time the assistance she provided grew out of needs identified through work the team accomplished during her previous visit. Her first visit was devoted to an introduction to the project, and a discussion of need areas and clarification of goals. The team felt that software evaluation was the place to begin their work, so her second visit included a software demonstration and evaluation workshop. The team reviewed various software evaluation forms and discussed what components they wanted to include on their form. Unable to agree upon the design of a form in the workshop, they made plans to complete the task before their liaison's next visit.

Concern about how to catalogue the evaluations led to a decision to have the liaison train the team in database management at her next visit. The third on-site visit consisted of a workshop on PFS File, and a discussion of the various application for database management in the special education program. In addition to cataloguing and tracking district software, the team

discussed creating a central database of student information, initiating computerized classroom record-keeping, and creating computerized IEP forms.

By the liaison's fourth on-site visit the team had completed its software evaluation form, developed inservice recommendations for training teachers in its use, assigned an official software "cataloguer", and secured a commitment from the district to purchase five new Apple computers for special education use. Discussion turned to the team's first priority need area -- the development of goals and objectives to help direct decision making for the uses of technology in special education -- and the realization that they would need another year of work to develop a substantive plan that matched curricular goals with technology goals. At this point the team realized they had made a mistake in not keeping their administration abreast of their activities, since they would need administrative approval to continue to meet for a second year. A list of the year's accomplishments were drawn up and plans were made to meet with the assistant superintendent to request a second year of support for the planning team's work.

For the rest of the day the liaison presented a workshop on the development of long-range plans for technology use in the district. The team determined to write a three-year plan addressing special education needs only, which focused on curriculum, equipment needs and teacher training. The overall goal of the plan was articulated, and arrangements were made to continue work on the plan over the summer.

The Oxford team, which began the year looking somewhat uncohesive, ended up as a well-organized and accomplished working unit. The team had taken its task seriously: it used all its on-site days, met together between the liaison's visits, learned to work well as a group, and developed leadership within the group as the Coordinator of Special Services withdrew more and more into other district responsibilities. After working through the concrete tasks of learning software evaluation and database management, they came back around to their original planning priority. They were chosen to receive a second year of assistance because it seemed they would benefit greatly from the opportunity to consolidate the gains of their first year of work.

The Second Year

The planning team set three goals for their second year of NAPSET assistance:

- to complete their three-year plan for technology use in special education;
- to implement their software evaluation and acquisition system, initiate the software tracking system, and evaluate the whole procedure; and

- to secure the hardware and software needed to meet program goals.

Their liaison visited Oxford three times during the second year. For the most part she helped them get past stumbling blocks encountered in the tasks they set for themselves. For example, she helped the team figure out how to deal with the fact that the five Apple computers they were promised by the district got diverted into the regular education program, and she helped them think through the sections of their computer plan which they could not conceive on their own. By the second year the team was functioning very well on its own however, and her assistance, while important, was less central to the team's activity.

Outcomes

The team completed the three goals they set for themselves in the second year, but they accomplished a lot more than that also. Their implementation of the software acquisition and management program involved holding meetings in each school to train teachers in the use of the program; these meetings resulted in the establishment of user support groups in several schools, as well as informed the entire district about NAPSET's activities. The team surveyed the entire staff about their computer use and training needs and developed inservice proposals for the district from the results. They visited the United Cerebral Palsy foundation to explore adaptive equipment their district might be able to use. And they contacted the Franklin NAPSET team several times, to learn more about their computerized IEP system.

Much of the team's activity in the second year could be described as "institutionalizing." Having recognized the importance of keeping the administration informed about their work, they set up an "advisory board" of building administrators and school board members, to whom they sent minutes of all their meetings and reports of all their activities. They established contact with the district's computer committee, so as to keep up to date with their work and coordinate efforts with them. They developed hardware and software requests for the upcoming fiscal year, and budget proposals for the following two years. And they began working with the district's director of federal programs, to explore funding sources to support continued work.

In general, Oxford Township was a model of success for the NAPSET project. The district started out with many of the characteristics the project believed would be necessary for success: commitment, administrative support, time, and a sufficient allocation of resources to allow things to happen. Initially, however, the team lacked a clear sense of how to proceed, as well as a strong leader. They spent the first year training themselves by working through specific technology applications; in the process they learned to work together as a group and, with the liaison's help, a leader emerged from the ranks and assumed most of the necessary functions of that role.

The lack of a district administrator on the team was a problem at times, but the Coordinator of Special Services was always available to call upon, even though she ceased to be an active participant on the team. In the second year they were really ready to apply what they had learned; the result was an impressive list of accomplishments, of which both they and their liaison could be justly proud.

VIGNETTE:
MILLVILLE SCHOOL DISTRICT

District Profile

Located in the heart of the midwest, Millville was the smallest and technologically least sophisticated site associated with the NAPSET project. A rural school district serving only two hundred twenty-six students, Millville has limited resources, but a highly committed staff of teachers and administrators.

Millville's special education program serves 40 mildly and moderately handicapped students. The program is directed by an elementary principal who supervises the one full time teacher, her classroom aide, and a half-time speech therapist. Resource rooms allow for the provision of individualized services to all special needs students in grades K-12.

Typical of many small, rural school districts, Millville is relatively resource poor. Nonetheless, with the support of the superintendent, the district had begun to explore instructional applications for computers, and had purchased a total of seven micros prior to joining the NAPSET project. Two Apple IIes were specifically purchased for special education, and a MacIntosh was available for use for administrative tasks. To facilitate the use of these machines, special education teachers had been provided with a one day training session focusing on basic operational procedures. Poorly designed, however, this inservice was not well-received, and teachers were, at best, hesitant to commit themselves to using the new technology.

The Local Planning Team

District support for the NAPSET project was evident in the inclusion of the district superintendent on the NAPSET team. Young and energetic, the superintendent was determined to use external resources to build an effective educational program, and it was he who had submitted the NAPSET application. Without time to coordinate the project himself, he appointed the special education director/elementary principal and the full time special education teacher as co-coordinators. He continued to participate in all team activities, however.

Other members of the NAPSET team included the district librarian, the part-time speech therapist, and a guidance counselor. The librarian was already in the process of developing a regional software lending program so that Millville and other small, rural districts could share their limited resources. Although the other team members were less knowledgeable about technology, they expressed a solid commitment to the project.

NAPSET Technical Assistance

The three priority need areas identified by the Millville team were:

1) To review existing policies/plans/procedures related to technology use and develop a skeletal long range plan.

2) To expand the local planning team's knowledge of potential instructional and administrative applications of Apple computers in special education.

3) To design staff development activities to increase teacher familiarity/comfort with technology.

Millville's primary needs during their year of NAPSET assistance were informational. Although equipment was available within the district, no one was adequately prepared to use it. Many of these informational needs could be satisfied through the provision of off-site assistance; thus, the NAPSET liaison visited Millville only twice during their year of association with the project. The first visit was primarily introductory and focused on finalizing the district CAA; during the second visit more substantive information and training was provided.

In late February the NAPSET liaison, accompanied by an expert on administrative applications, visited Millville for the second time. The two spent a good part of the day with the NAPSET team reviewing Apple software and software evaluation techniques, and discussing the development of a software management system. The information presented was significant in that team members developed an understanding of the principles involved in making judgments concerning good and bad software, and in some of the issues involved in purchasing, storing, lending and sharing software within the district and/or region. In addition, during this visit the district's telecommunications system was hooked up so the district could use SpecialNet to communicate with their NAPSET liaison, and gather information often inaccessible to small, rural districts.

In addition to developing their own knowledge and skills, Millville's planning team was concerned with providing training in computer use for all district personnel. On the advice of their NAPSET liaison, the team developed a district needs assessment indicating the kinds of training that would be most appropriate for and accessible to teachers working with students at various grade levels. Using information provided by their liaison, the team planned a full day summer workshop with a series of presentations on instructional and administrative applications during the morning session, and an afternoon of hands-on training. Team members and other local personnel who had developed areas of "expertise" presented the training sessions, which were highly successful.

Outcomes

Millville's small size changed the nature of NAPSET technical assistance from a specifically special education focused effort to a more general district technology project. Training was provided for all district personnel, not just special educators. Since special education took the lead, however, the needs of special students would be assured of being considered in all future planning efforts.

Pleased with the success of their first year of technology planning, Millville continued to support its planning team even after the termination of the NAPSET project. The team however was disappointed in not being chosen to receive a second year of assistance. They found it difficult to maintain the momentum of the first year, and met less frequently when on their own. Nonetheless, they did plan a follow-up inservice, and, in general, helped to maintain enthusiasm and interest in microcomputer use throughout the district. Additional hardware and software has been purchased by the district, and teachers at both the elementary and the high school level are now using computers with more consistency, especially for classroom management tasks.

VIGNETTE:
NORTHBORO SCHOOL DISTRICT

District Profile

Northboro is a suburban community in the northeast with approximately 3,400 students, five elementary schools, one middle school and one high school. About 14% of the student population has been identified as educationally handicapped, and these students are, for the most part, served within school district programs which range from fully mainstreamed to substantially separate. A Greater Metropolitan Educational Collaborative provides educational programs for low incidence handicapped and students with highly specialized needs. This collaborative also supports the school district with services like teacher training, transportation for the handicapped, bid purchasing, etc.

At the start of the NAPSET project technology use in special education had been limited almost exclusively to the administrative level, where software was used to generate IEPs, state reports, and student lists for reference. No special education staff had been trained in instructional uses of technology; what little was going on in classrooms occurred on a purely "hit or miss" basis. In September 1984, a three-year district-wide computer technology program was begun. This program promoted the use of technology in the instructional program. The focus of the first year was on the high school program (the district had just purchased 21 Apple IIes for the high school when NAPSET began working there); in the second year the middle school would receive attention; and in the third year, the elementary school. This program did not include any specific goals for special education, however. It was hoped that the NAPSET project could help provide the overall program with suggestions that would be specific to the special education program, and that could be integrated into the district-wide plan.

Although Northboro's current administration was very supportive of introducing technology (as evidenced in the district's three year implementation plan) and initiating change, historically, the system was slow to change. Neither was inservice training given high priority; it was generally conducted after school rather than during release time for teachers.

The Local Planning Team

Northboro's original application to NAPSET was submitted by the then current coordinator of computer technology, who had developed the district's three-year implementation plan and wrote convincingly of how the two projects could be integrated. Unfortunately, this man was hired away from the district a week before the NAPSET project began. Responsibility for NAPSET fell to the director of special education, a woman who gave the project low priority, and failed to maintain a leadership role

beyond its initial stages. She chose as her co-coordinator a middle school guidance counselor who gradually assumed the leadership position. This woman proved to be the only truly committed and capable team member, but her personal experience with micro-computers was limited, and she was somewhat restricted in her freedom to exercise leadership by the fact that her supervisor remained the nominal team leader.

Other team members included two high school teachers with a resource room and a self-contained classroom, respectively; two middle school teachers, one of severely handicapped students and one in regular ed, who had a lot of mainstreamed kids and did a lot with micro-computers in his class; one special education aide; and the new coordinator of computer technology in the district. This man, though initially interested in NAPSET, had no knowledge of special education and no administrative experience. Neither did he have outstanding technological qualifications: he was a high school math teacher who had been chosen for the position after no viable outside candidates applied. As the demands of his new job began to overwhelm him, he withdrew more and more from the NAPSET process.

NAPSET Technical Assistance

The Northboro liaison met initially with the special education director, the middle school counselor, and the new computer coordinator to discuss district needs and possible strategies to meet those needs. As there was virtually no instructional use of technology in special education at that time (and no equipment yet except at the high school) three need areas emerged which were taken as tentative areas of focus for the district's CAA: inservice training for instructional uses; a plan to coordinate the team's activities with the district's three-year plan; and the design of a software acquisition and distribution system.

A few weeks later the liaison met with the entire LPT to introduce the project and discuss the CAA. At that point the team had not yet convened to discuss their needs jointly; under scrutiny the three tentative areas of focus fell apart. There was no consensus in the group, but more significantly, there were no strong feelings, due in part to a lack of knowledge and prior consideration of the issues, in part to a lack of commitment among the team leaders. The special education director's lack of commitment was communicated to team members in many ways, through poor organization and lack of real concern for the issues under discussion, among others. It was clearly difficult for team members to put a lot of energy into the process under these circumstances; people arrived late and left early from this and every meeting the liaison had with the LPT.

While no decisions about the CAA could be made by the end of this second meeting, one concern came through very clearly: the team felt it needed to accomplish some concrete hands-on learning to feel successful in the project. When the team met again to follow up on this meeting, the main activity was to set up a

schedule of inservice and training events for the rest of the year. This was to be a full team meeting, but only the special education director, the middle school guidance counselor, and the computer coordinator showed up, explaining that they thought this could best be accomplished by a smaller group. A series of six short technology training sessions were set up at this meeting, some to take place during regularly scheduled district Curriculum Days, others to involve outside trainers and consultants and take place at specially scheduled times. The need areas originally discussed for inclusion in the CAA, in addition to need areas identified in a teacher survey, were dealt with in a very cursory way: for the most part team members invoked past procedures which had already been established (but which, needless to say, had not proven especially successful.)

Team members felt they had covered a lot of ground and been very productive during this meeting. Their liaison had a somewhat different view: she felt their treatment of many significant issues had been shallow at best, and that they continued to avoid addressing the larger questions concerning the organization of technology use in special education. The team's concern for accomplishing something "concrete" was not to be denied however, and the training schedule established looked like it could be quite successful.

The liaison's fourth visit coincided with a training event: a woman from the state department of education was coming to the district to give a workshop on general issues of technology use and classroom management to middle school special education teachers. Notice about the workshop was inexcusably late, however, and turnout was poor as many teachers had not had time to get substitutes for their classes. Moreover, workshop evaluations indicated that teachers had trouble relating to the material as they did not yet have any hardware to with which to work in their classrooms.

At this point there was serious doubt that the LPT, and especially its leadership, was committed enough to warrant its liaison spending much more energy working with them. A workshop for elementary teachers similar to the one for middle school teachers was cancelled: it did not seem likely to be any more productive than the earlier workshop had been. The liaison continued to provide information services to the team, but agreed with the LPT to cancel the rest of her scheduled training obligations. It did not make sense to train teachers in technology use who would not have access to hardware for at least one and possibly two years. Needless to say, the district was not selected to receive a second year of NAPSET assistance.

Outcomes

Northboro was considered one of NAPSET's least successful sites. The benefits of the Northboro efforts seemed limited to putting some individual people in touch with resources they were not already familiar with. Outcomes in this category not previously

mentioned include introducing two speech and language teachers to a range of electronic speech synthesizers, and demonstrating a piece of software for use with the visually impaired to both teachers and a visually handicapped student. These individual consultations, set up by the middle school guidance counselor, proved to have the most lasting impact in the district: both hardware and software were purchased for use with specific students with audio and visual impairments.

The team effort in Northboro did not get very far, however. Since the original computer coordinator left the district, the NAPSET project had lost its top position on Northboro's priority list. The LPT lacked strong leadership, and the team never got itself together enough to identify appropriate need areas and really focus upon them. The training efforts fizzled because of inadequate planning and publicity. Another factor contributed to Northboro's lack of success, however, which ironically had to do with the ease with which NAPSET could communicate with the district. Northboro was located within a fifteen minute drive of The NETWORK. It was therefore possible for its liaison to make many short visits to the district rather than concentrating all her on-site time into longer one- and two-day blocks. What originally seemed like a great advantage proved to be quite disadvantageous, however. On-site visits were almost always scheduled for after school to avoid having to hire substitutes for team members; but teachers were tired at the end of the day and often had conflicting obligations -- attendance at meetings was poor. Moreover, the team was never able to take a whole day away from their everyday work and focus solely on NAPSET. Setting aside a block of time, releasing teachers from their ordinary obligations, creates a sense of importance about the work to be done and a certain sense of privilege for the chosen ones. It also provides time to really focus on the issues at hand, something the Northboro team had real difficulty doing.

The liaison also felt something was lost by not having the time to present a complete introduction to the project, as she had in all her other sites. As well as imparting important information, which the Northboro team did not necessarily get, the liaisons' introductions established a clear understanding of the project's planning orientation and a sense of the opportunity it provided the district to make real changes in their use of technology in special education. Northboro, it seemed, never really "got the idea" of the NAPSET project; on top of the team's weak leadership, this made it very difficult for them to make real accomplishments.

VIGNETTE:
FRANKLIN SCHOOL DISTRICT

District Profile

Franklin is a large urban school district in a sparsely populated northwestern state. The district administers a total of 27 schools in a 50 square mile area around the city, thus serving both the urban center and outlying areas adjacent to it. Franklin is a kind of frontier town in a rural state. It has benefitted from a booming natural resource industry and has money to spend on technology in its schools. Moreover, the state has made technological development in all areas a high priority, and the interest in educational technology is high.

There is a total of 13,000 students in the Franklin district, of which 2,000 are special students. (800 gifted and talented students are included in this figure.) Franklin provides a full range of services for its special students. It belongs to no regional educational collaborative or IEU, and thus develops all programs for severe and profoundly handicapped students itself. It is proud of the depth and quality of its special ed programs.

Franklin was among the most technologically resource-rich of all the NAPSET sites, with micro-computers in regular and varied use at all levels of the school system. In classrooms, micro-computers were used to support basic skills acquisition, to develop critical thinking, and as a basic learning tool (i.e. for word processing and/or bookkeeping.) There were 30 micro-computers in each of four high schools, another 20 in each middle school, and at least six in each elementary school. The district has a printer for every four micro-computers, both green and color screens, and double disk drives in most of its microcomputers. The availability of hardware was such that every resource teacher either had a micro-computer in his or her classroom, or else had easy access to one.

Micro-computers were used administratively as well. In the special ed department student records were kept on disk in the central office, as were test scores and student evaluations. Franklin had set up two internal bulletin boards to telecommunicate within the district, and the special ed department made frequent use of SpecialNet. In addition, it owned a portable terminal which administrators took with them when they left the district, to send letters and information back home quickly.

Franklin had recently hired a full-time computer coordinator when NAPSET began working with the district, to coordinate and supervise the 3 and 1/2 full-time computer teachers already on staff. District interest in and support for educational technology, even in special education, was high. While the district had made a general decision to utilize Apple computers, no district technology implementation plan had ever been

developed. All hardware and software purchases were made at the building level, and none of the buildings had any implementation or purchasing plans either. While hiring a computer coordinator was a first step in the direction of district-wide technology planning, little coordination or planning had been done in Franklin before NAPSET began working there.

The special ed staff person who first applied to the NAPSET project from Franklin was clear that coordination and planning would be the first priority of a local planning team. While acknowledging that their technology resources were impressive, he wrote, "It sometimes appears that we have a Hydra on our hands." Too often, the cart had been put before the horse with technology use in the Franklin schools, and equipment was purchased without first evaluating what was needed and what kind of technology could best meet that need. Local planning team members recognized that they had to step back and assess their needs, develop goals for technology use, plan strategies to meet these goals, identify resources, and develop a "blueprint" to guide their utilization of technology in the special ed department.

By the first LPT meeting six need areas were identified, of which three were chosen to take priority in the first year. These were:

- to develop goals and objectives regarding the introduction of technology into special ed;

- to address identified information needs of resource teachers, including:

  -- professional uses of computers
  -- software selection and use
  -- applications for use with special disability areas
  -- general computer use, maintenance, and trouble-shooting; and
  -- to provide information and/or training to parents of special needs students about school and home uses of micro-computers.

Franklin was ready for change, and could provide both material and ideological support for educational technology. It was an excellent situation for NAPSET to be working in.

The Local Planning Team

The Franklin local planning team was comprised of the secondary school special ed coordinator (who was also acting director of the special ed department), an elementary resource teacher, a low-incidence pre-school teacher, a speech and language instructor, a secondary resource teacher, a secondary gifted and talented teacher, the computer coordinator for two junior high schools, and a parent representative, who also taught music in the regular curriculum. The team represented both different

constituencies and different geographic areas in the district, and varying levels of technological sophistication. While there were some "hard-core techies" on the team, it turned out to their advantage to have included people with a range of technological expertise. All team members were hard workers and leaders of some sort, however, and many had worked together in the past, which meant they were able to work well together quickly.

The LPT benefitted from excellent team leadership. The two coordinators divided leadership responsibilities very effectively, one focussing on administrative liaison activities, the other attending to the process of getting concrete team goals accomplished. The acting special ed director maintained good relations with upper level administrators, knew how to get things accomplished in the district, and did. The elementary resource teacher was a micro-computer maverick who loved working out new ways to do things better on a micro-computer. Both worked well with the team, which was itself exceptionally hardworking and committed. There was an overwhelming desire among this group to figure out appropriate strategies, then make real changes.

NAPSET Technical Assistance

Because Franklin was located at a considerable distance from the NETWORK, its liaison visited only twice, but stayed three days each time. The first visit was devoted to introducing the project and orienting the team to some of the change and planning principles which constituted the core of NAPSET technical assistance. In addition, the liaison worked helped the team prioritize its needs and develop a reasonable and appropriate CAA. The final target areas were determined on the basis of a systematic survey of teachers' technology needs, which the team had conducted before the liaison's visit.

The LPT was ambitious: while the three need areas identified (see above) were general, the team outlined a long list of activities to be undertaken to address each of these needs. For example, the activities listed for Need Area 1 included:

- develop and write goals for implementing technology in special education
- develop new activities (or tie in existing activities) to goals developed above
- coordinate planned activities with district computer coordinator to share expertise and avoid over lap
- develop a newsletter for resource teachers and parents to disseminate goals and activities regarding the implementation of technology
- meet with disability area interest groups to plan and conduct activities relating to implementation of technology

The activities outlines for Need Areas 2 and 3 were equally extensive and ambitious.

For most teams, this would have been an unrealistic set of goals and expectations. The Franklin LPT had enough energy, commitment, and organizational skill to more than accomplish what they set out to do, however. By the time of the liaison's second visit late in the year they had established special interest user groups among special ed staff, planned and delivered over three dozen inservices and workshops for parents and teachers on various aspects of technology in special education, published several issues of a NAPSET Newsletter which was distributed to NAPSET sites around the country as well as within the district, established a new software review procedure, developed lists of software appropriate for use at all grade levels and acquired much of it, disseminated a customized computerized IEP program, formulated a needs assessment instrument for planning new workshops and inservices, researched and applied for state and federal monies for special technology projects, and procured block grant funds to purchase a super computer for use throughout the district.

Although the liaison only visited Franklin twice, the LPT maintained close contact with him via SpecialNet throughout the year, sending updates on their activities almost weekly and asking for his feedback. Thus, while the team was unquestionably primarily responsible for the above list of accomplishments, they took full advantage of the support that was available, and received innumerable small pieces of advice and information as well as reassurance and moral support throughout the year. It is possible that Franklin made the most use of their liaison of any district in the project, while still living up to their own obligations to the cooperative agreement.

The liaison's second visit focused on evaluating the LPT's accomplishments to date and discussing the future of their efforts. Franklin had a history of running through educational innovations: new projects which were begun with much fanfare often fizzled for lack of follow-up attention. The LPT was determined that this would not happen to the accomplishments of NAPSET, and decided to work toward institutionalizing both the NAPSET LPT and some level of technology use in special ed classrooms. Plans were drawn up to write support for the team into the district budget for the next year, and to develop a component checklist of computer skills to be included in the standard teacher evaluation format. Additional plans were made to include computer skills in the on-going special ed curriculum. In addition, the liaison presented a workshop on fund-raising and grant-writing, to which the LPT invited other district staff with grant-writing responsibilities as well.

The Second Year

Franklin was chosen to receive a second year of NAPSET assistance on the strength of their accomplishments in the first year, and their commitment to institutionalizing these in the second. In the second year they worked primarily on establishing ongoing structures to support and maintain the use of appropriate technology in special ed, and in regular education as well.

The LPT approached the task from a political angle: their aim was to demonstrate to the district that the LPT was a valuable resource with much to offer other staff about both technology and the change process. The LPT had already brought national recognition to the district through the NAPSET Newsletter (which maintained a circulation of 300, a significant percentage of which was out-of-state) and through presentations at national and regional technology conferences. (Team members gave talks and papers about their work at the second year NAPSET Orientation Meeting in Boston in August, and at an annual meeting of the State Association for Computers in Education in April.) The Team used a large portion of their liaison's one visit "sharing" him with principals and district curricula coordinators. Their aim was to build an appreciation of the work they were doing in the district as well as teach skills pertaining to the evaluation of computer use in regular as well as special ed. They hoped to build a more permanent place for themselves in the district bureaucracy.

As it turned out, a drop in the price of Franklin's primary income-producing commodity in 1986 had a dramatic effect on the area economy and school budget. 52 positions had to be cut from the district payroll; needless to say, release time for the LPT did not survive these drastic budget cuts. The LPT continues to meet, though less frequently, on its own time, to work on on-going NAPSET projects. Most important, however, is the fact that many of the changes the LPT was responsible for were already institutionalized by the end of the second year of assistance when the team's release time ran out.

Outcomes

The Franklin LPT's astonishing accomplishments over the course of two years can be attributed to a number of factors working in concert. First, interest in micro-computer technology was high throughout the district when NAPSET began working there, and the amount of technology already available was truly unusual. The team had a resource rich, supportive environment to work in. Second, the team was made up of hardworking, committed people, with a lot of desire to make things happen. The district itself offered little general resistance -- it saw itself as innovative and was comfortable trying out new ideas. The two LPT co-coordinators were an unusually good leadership team: the administrative and political talent of one balanced the technical expertise and creativity of the other, and both had good team

skills. An excellent personal rapport with their liaison and an understanding of how to make the most of his support without shirking their own responsibilities meant that this LPT was able to take full advantage of the technical assistance NAPSET offered.

Finally, until the district imposed its massive budget cuts, the team encountered no unexpected obstacles. They are an example of how much can be accomplished through thoughtful planning and hard work when the conditions for change are favorable.

VIGNETTE:
MANCHESTER COUNTY INTERMEDIATE UNIT

I.U. Profile

Manchester County Intermediate Unit serves the needs of 21 constituent school districts in the northwestern part of an eastern state. It is a densely populated area, but nonetheless has communities that are of a rural nature as well as urban and suburban, thus representing a cross section of educational needs. In the area of special education, the I.U. provides coordinating and consultative services to its member school districts as well as providing direct service special education programs for low incidence and severely handicapped populations. As a consequence, the I.U. has program and staff needs (and problems) analogous to those of the local districts in addition to those concerns that are more typical of its function as a consulting agency.

The I.U. has approximately 40 Apple II+ and IIe microcomputers for use in the special ed programs it operates -- these constitute about half the special ed services in Manchester County -- and a small core of staff knowledgeable in technology areas. In addition, it works closely with staff from the 94-142-funded Regional Resource Center, and the Resource and Information Center for Special Ed, which provides special ed information to any one in the state upon request. The hardware, software, information and training resources to which the I.U. had access through these organizations was truly impressive.

The I.U. had organized a Special Education Micro-computer Field Test, which was in its third year of operation when the NAPSET project began. The field test was essentially a collaboration and support group for special educators exploring new applications for technology in their programs. The I.U. provided hardware and software for the 30 teachers involved, as well as staff to assist in training teachers and repairing equipment.

Five of the 21 I.U. member school districts participated in the NAPSET project. All five were involved in the field test study as well. These districts were at varying levels of sophistication in the use of technology, but in all cases technology was available and used in the regular education programs and was, or was beginning to be, used in the special education programs as well. In all cases some money was available for the purchase of hardware or software supplies.

While each participating district established its own Local Planning Team to work on need areas identified in the planning process at "home", as a group they were committed to working with NAPSET at the I.U. level, and technical assistance was provided at this level only. The NAPSET liaison had no direct contact with the local teams.

The I.U. planning team chose to focus its attention on general, common needs which all the participating districts shared. Through the NAPSET assessment and planning process the following need areas were identified:

- Provide staff with the training and informational resources needed to learn to integrate the use of the microcomputer into the classroom and the curriculum.

- Develop a scope and sequence for teacher training that will provide for initial training, follow up, and specific training in areas beyond literacy.

- Provide networking and communication opportunities for staff members to share experiences and problems relating to the use of technology in special education.

- Develop a plan to address the need for computerized management systems among the districts within the I.U.

The I.U. team was interested in setting up systems at the I.U. level to support or assist local efforts to address these issues. They were particularly concerned about training and support for teachers using technology. They wanted to use the NAPSET project to identify experts in the field and arrange for consultations with them. They hoped to be able to discuss these issues with the experts, then engage their assistance in developing the most appropriate systems to address the needs and conditions in Manchester County.

The I.U. Planning Team

The Manchester County Intermediate Unit Planning Team consisted of the I.U. coordinator of federal projects (who was also the team coordinator), two assistant directors of Special Services at the I.U., the Special Education Directors from the five participating districts, and a teacher trainer from the nearby state resource and information center for special ed. This was a committed group of people. The team included some of the region's best technology experts in one of the I.U. and the state resource center representatives. The district representatives, while not technologically sophisticated, had a sophisticated conceptual understanding of the task before them. The fact that all five districts were represented on the planning team by their program directors gives some indication of the seriousness with which they were approaching the project. The directors were looking for ways to move ahead intelligently with technology in their districts, and the I.U. was looking for ways to coordinate, facilitate, and/or assist in these efforts.

This planning team worked together extremely well, both as a group and as a regional level task force. The coordinator was meticulously well organized. He provided flawless logistical support for the team, following up on every detail and

visionary leadership, however. The team itself operated at a high level of effectiveness, in part because the special ed directors were mature, experienced administrators who had had prior experience working together as a group. Through the I.U. they met regularly with the other special ed directors in the region to discuss common issues and problems, and consider coordinating activities. In these meetings they learned to have respect for each others' wisdom, and to think in terms of regional systems. Their history of successful collaboration and the excellent lines of communication that had been established between the I.U. and its member districts were directly relevant to the success of the NAPSET team's efforts.

NAPSET Technical Assistance

Because the need areas identified by the planning team were broad, and because the team was looking to develop general procedures for addressing them, they adopted a general activity sequence to address all four need areas. It was:

- The Planning Team will develop a list of possible consultants who could help the team develop plans to address the four need areas.
- The Planning Team will develop a general list of criteria that can be used to screen possible consultants and a timeline for consultation days.
- NAPSET, using the resources at its disposal, will seek out consultants who meet the requirements and who can provide the expertise sought by the Planning Team.
- The Planning Team will communicate with NAPSET concerning its information needs.

Because the organizational experience and skills of the planning team were high, Manchester County's liaison spent very little time with process activities aimed at strengthening the team and its sense of power and purpose. (In some NAPSET sites, these activities constituted the bulk of the technical assistance.) Neither was the liaison asked to provide much technical information -- the I.U. already had access to excellent informational resources through the Regional Resource Center and the state Information Center for Special Ed. Most of her work, in addition to keeping in touch with the planning team's progress, involved locating appropriate area experts and setting up consultancies at the I.U. After a brief meeting to introduce the planning team to NAPSET in the fall, she did not return to Manchester County until late spring, at the time of the first consultancy.

The planning team was looking for consultants who had both specific technical knowledge and an overarching understanding of issues relating to the utilization of technology in special ed.

They were willing to help pay for someone who could help them conceptualize on several levels regional systems which would effectively address their technology concerns. Thus their liaison arranged to have Bud and Dolores Hagen of "Closing the Gap" fame come to the I.U. for three days of discussions and workshops. Over the course of the three days the team discussed a wide range of issues, from peer sharing of information to classroom integration to parent involvement in special ed technology. Most time was spent working out models for teacher support and discussing what the I.U. had to do to set up longterm systems to support teacher utilization of special ed technology. Concrete outcomes of the meetings included the decision to develop a toolkit to assist all implementing teachers and the realization that a longterm I.U. technology utilization plan had to be developed.

Two days of discussions with the Hagens were split up by a one day mini-conference on technology for special education teachers, in which local users as well as the outside experts gave workshops and presentations. The consultancy was considered highly successful, and provided the planning team with many ideas for next steps in the planning process.

Two weeks later the liaison chaired a meeting of the team with an administrative applications expert, to discuss team members' administrative needs and various ways to address them technologically. The consultant discussed the pros and cons of various hardware configurations and software packages in light of team members' needs, and demonstrated various IEP, spreadsheet, and administrative word processing programs. This was a more technically focussed but equally successful consultancy.

The Second Year

Because the I.U. planning team was deeply involved in its planning process at the end of the first year, it was decided to extend NAPSET assistance into a second year. The team chose no new goals; rather it planned to continue along the lines established in the first year through the assistance of the liaison and two outside consultants, possibly offering its plan as a model for other intermediate units. At this point the team was entirely self-sufficient: it had established procedures for meeting its goals and was proceeding under its own steam. In fact, technical assistance in the second year consisted of little more than keeping in touch with the team and offering advice when it was appropriate. The planning team continued to meet, if somewhat less regularly, and a toolkit/teacher manual to assist special ed teachers involved with micro-computer technology was developed and disseminated. Budget reductions in the region curtailed the planning team's activity somewhat, but in general they continued on toward their goals of region-wide training and support for the use of technology in special education.

Outcomes

The Manchester County Intermediate Unit planning team was the most successful of all NAPSET teams addressing technology issues at a regional level. The I.U. had open lines of communication and good working relations with its member districts, and it had a good reputation for providing excellent educational services. Thus it was logical to look to the I.U. for leadership in the area of technology policy and practice. The team itself was comprised of skilled administrators with a history of successful collaboration at the I.U. level; they worked effectively and well together. Moreover, most of them had already been working on the Special Ed Microcomputer Field Test together, so had a prior involvement in and commitment to the NAPSET issues. (One of the concrete outcomes of the NAPSET project was a decision to continue the field test indefinitely -- team members realized there was still much to learn from attending to micro-computer implementation in real classrooms.)

Because this was an I.U. planning team and not a district level team, need areas were addressed at an organizational rather than an implementational level. The team discussed all four issues at length and with expert advise; they were able to arrive at an understanding of the issues and strategies for addressing them which they felt satisfied with. Some I.U. training was organized and the toolkit/teacher manual was produced and disseminated, and more I.U. level activities will occur in the future. But much of the value of what occurred in Manchester County will take longer to manifest itself in actual changes in practice. In particular the wisdom which the five special ed directors take back to their districts is difficult to quantify. How much they actually do with what they have learned remains to be seen. The structure for change to occur exists, however. All five established local planning teams during the NAPSET project, and all five teams were active without any outside assistance from the NAPSET liaison. In addition, the local district teams have the support of an interested I.U. and the special ed directors in the five districts are in close contact. In an I.U. that has shown both leadership and local commitment to special ed technology, it seems safe to assume that more will be happening in the future.

REDCLIFF/JASPER

Redcliff and Jasper are neighboring districts from the western part of the country which applied to the NAPSET project together, proposing to work collaboratively toward the accomplishment of their technology goals. Located in a semi-rural, mountainous area 30 miles from the closest urban center, they shared membership in a Special Education Consortium which provided low-incidence services to area districts but had no history of direct collaboration prior to their participation in NAPSET. The impetus for their joint application was the friendship and common concern about technology issues of the districts' special education coordinator and program specialist respectively. Neither district had had much experience with special education technology. Somewhat uncertain about their ability to face technology issues alone, they felt that by working together they could provide each other with support and assistance and increase the likelihood of making significant accomplishments through the NAPSET project.

Redcliff and Jasper each formed their own Local Planning Teams, but the local team coordinators met together with their liaison to develop a single Cooperative Assistance Agreement. This core team identified four need areas which both districts could profit from working on, in order to be able to share training sessions as well as provide each other with assistance and support around the issues. During his on-site visits, their liaison would meet first with this core group to discuss general issues pertaining to the CAA and their collaboration, then with one or the other of the LPTs to discuss problems specific to their district. He also provided joint training sessions to both LPTs together.

The four priority need areas identified in Redcliff/Jasper's CAA were:

A. Assistance in setting up and operationalizing a telecommunications system for both districts.

B. Assistance in developing/expanding record keeping systems for both districts.

C. Provision of information about computer applications for vocational training of special needs students in both districts.

D. General consultation to address specific planning issues encountered by each district individually.

After a highly successful year of collaboration, Redcliff and Jasper applied for and were granted a second year of NAPSET assistance.

District Profile: Redcliff

Redcliff is an agricultural and light manufacturing town in the foothills of a western coastal mountain range. It is a middle class community, neither rich nor poor, but not up-and-coming and without a lot of extra resources to devote to its schools. The district includes 3,800 kids in grades K-12; two elementary, one middle and one high school; and a special education population of approximately 450. In addition to providing half- and full-day special classes, a resource specialist program, and designated instructional services (adapted physical education, counselling,speech/ language therapy etc.) the district runs a Licensed Children's Institute and two Independent Learning Centers for special students.

Two years earlier Redcliff had written a scope and sequence for computer literacy in grades K-8, but it did not include goals or procedures for special needs students. The Special Education Program Specialist was responsible for the acquisition and implementation of micro-computers in her programs. She had purchased one Apple MacIntosh which was used for record keeping, and one Texas Instruments, seven Apple IIes, and 17 TRS-80s which were used in the classrooms. But cutbacks in funds for instructional supplies meant that little software was available and the hardware, though in constant use, was not utilized especially creatively.

In general, the Local Planning Team was cynical about the district's support for technology in special education. A year earlier the special ed program had been decentralized and the department dissolved. Responsibility for special ed services was now shared between the Director of Special Education and the building principals. The programs had no separate budget, no final control over IEPs, and very little independent power. District administrators were distant and provided little active leadership or support for the special ed programs; in fact, earlier that year 15 micro-computers purchased with special ed money had been diverted into the regular ed program. The explanation offered was that regular ed "needed them more."

The Local Planning Team

Redcliff's LPT was comprised of an elementary resource specialist, a high school special class teacher, a regular education computer literacy specialist, a parent, and the Program Specialist, who was the team coordinator. The team itself reflected the "down" spirit within the special education program; the Program Specialist, on the other hand, was a motivated, active, enthusiastic group leader. She had already conducted a county-wide technology needs assessment and was involved with a regional Teacher Education and

Computer (TEC) Center which offered technology training and assistance through the county department of education. Her leadership was the driving force behind Redcliff's accomplishments during the two years NAPSET worked with the district.

Redcliff had a computerized record keeping system in place when the NAPSET project began, but it was cumbersome and difficult to use, and the LPT wanted to improve it. The district also owned a Hayes Micromodem which had never been used; thus their orientation to the first two need areas was simply to expand and develop systems that already existed in some form in the district. The third need area was essentially an information-gathering task to be conducted jointly by the two LPTs and their liaison. The fourth need area reflected Redcliff's desire to move beyond a drill and practice orientation to technology and establish an infused computer curriculum for its special education programs. The team hoped that the development of a two-year outline for technology use in special ed would be the first step in that direction.

NAPSET Technical Assistance

At his first on-site visit Redcliff/Jasper's liaison met with the core team of representatives from both districts to clarify the collaborative process and present a preliminary draft of the CAA. He also met with both LPTs together to introduce them to the project, offer general information about special education technology and telecommunications, and charge them with their responsibility over the next year and in the intervening period before his next visit. In Redcliff this second task involved reviewing the current record-keeping system and conducting a needs assessment to clarify what areas ought to be included in a general planning document.

At his second visit in March the NAPSET liaison again met with the core team to discuss joint progress, in particular regarding Redcliff's record keeping system, which by that time had been redesigned and would be used as a model for Jasper in the development of their system. His joint meeting with both LPTs included a general slideshow on special education technology and adaptive devices, and a workshop on modems, telecommunications, and SpecialNet presented by a consultant with expertise in this area. The workshop included a hands-on demonstration of how to use SpecialNet, as both districts were then in the process on going on-line. Later in the visit, the liaison met with the Redcliff team alone, to review their progress toward developing a planning document, offer advice on the process, and provide some examples of planning documents developed by other districts.

The liaison's third visit in June was devoted primarily to the review of drafts of both districts' planning documents, discussion of their presentation to the districts' respective school boards, and consideration of Redcliff/Jasper's application for a second year of NAPSET assistance. Throughout the year the liaison communicated frequently with Redcliff, first by telephone and mail and later, as they became more familiar with telecommunications, via SpecialNet. He provided information and contacts on VocEd software, record keeping systems, and planning documents throughout the year, and encouragement to team members, especially the team leader who was the most actively involved in the NAPSET process.

Redcliff's program specialist was responsible for upgrading the district's record keeping system, keeping in touch with Jasper's team leader, and teaching her how to set up a similar record keeping system for Jasper. The district's modem was at the computer in her office, so she was the primary beneficiary of their new telecommunications capabilities also. In fact, her team was not as actively engaged in the work of the project as they might have been. They did provide a forum for discussion and structure for support of the NAPSET innovations, but their unwillingness or inability to take a more active part in, for example, the writing of the district plan may have limited the team's overall progress. The team met regularly but not frequently; their overall energy was not overwhelming. Clearly conditions in the district put a damper on their enthusiasm.

District Profile: Jasper

Conditions in Jasper were somewhat more supportive of innovative educational change. Jasper is a small, well-to-do community located in the mountains "up the hill" from Redcliff. Set in a beautiful location, there is a resort-like quality about the place: people come to Jasper to take vacations.

With a total of 380 students in grades K-8, the school district is significantly smaller than Redcliff. The schools are new in Jasper, the staff is small but highly motivated and used to being exemplary, and the district superintendent was interested in the NAPSET project and gave it his full support.

The district itself was just beginning to get involved with micro-computer technology when the project began. It had a computer lab with 16 micro-computers, which many of the higher incidence special students had access to through their regular classes. Micro-computers were used in some way in all the special education classrooms also. This did not involve a lot of computers, since there was a total of only

54 special students total in the district, and the hardware had been used primarily for drill and practice up to that point. But each of the four special ed classrooms had an Apple IIe or a Franklin micro-computer, and the teachers were interested in learning how to use them more creatively. They were also interested in learning some administrative applications.

The Local Planning Team

Because the special education department was so small, the Jasper Local Planning Team consisted of the entire department plus a few district administrators, namely the Vice-Principal, who represents regular education at IEP meetings, and the Computers and Chapter I Coordinator. Virtually the entire team met together weekly as a matter of course anyway, and NAPSET issues were addressed regularly every two weeks. It was a perfect arrangement for ensuring full communication with and participation of the entire department in the project. The team leader, who was also the district Special Education Director, was an organized and energetic person who promised to serve the project well.

NAPSET Technical Assistance

Jasper already had a modem and a dedicated phone line, and the team got connected and learned how to telecommunicate early in the project year, even before the workshop on modems and telecommunications. With a few exceptions they communicated with their liaison electronically from then on, and used the SpecialNet bulletin boards to put out queries about VocEd programs and district electronic planning documents. Team members, but especially the Special Ed Director who was the team leader, became regular and fluent users of telecommunications networks.

Developing a planning document was of particular interest to the Jasper team. At their liaison's suggestion they conducted a needs assessment, went through a guided process to help them determine what their special ed computer plan should include, and looked at planning documents from other districts. In part because the whole team had a stake in the outcome of their work, and in part because they met together frequently, they had completed a draft of the plan by April. This document was sent to the liaison for comments and advice, and members of the Redcliff team reviewed it as well. The liaison continued to review drafts of the document through the summer. Eventually it was presented to the school board, where it won the district's support and approval.

The Second Year

Both Redcliff and Jasper's LPT leaders were impressed with the effectiveness of NAPSET's planning process. They felt that above anything else this approach had enabled them to figure out the most effective way to make use of technology in their programs. In their application for a second year of assistance they proposed to present this planning approach to interested neighboring rural districts through the Special Education Consortium to which they all belonged. They knew there was a need for technology assistance in these rural districts, and were anxious to pass on some of what they had learned the previous year. In addition, they planned to extend their work in telecommunications and VocEd applications by disseminating a newsletter on special ed technology through SpecialNet and forming a regional VocEd Technology Committee. They also planned a joint inservice on software evaluation, to begin the process of identifying appropriate software to infuse into their curricula.

Outcomes

Redcliff and Jasper were among NAPSET's most successful client sites. In all four of their targeted need areas they achieved outcomes which ranged from good to exemplary. Both districts were successfully trained in telecommunications, and now use SpecialNet bulletin boards and electronic mail regularly. Both set up satisfactory record keeping systems for their special ed programs, Redcliff by modifying its existing database record keeping system, Jasper by previewing a variety of database packages and ultimately adopting Redcliff's revised package. The Redcliff LPT leader then trained the Jasper team in the system's use.

The search for VocEd software packages continues in both sites. This was the least productive goal, although that might have been predicted -- there simply is not much VocEd software available. The long-range planning documents produced by both teams, on the other hand, will serve the districts well as they move into the next phases of technology implementation. These were not curricula scope and sequences, but rather outlines of work to be done with technology in special ed, which included philosophy statements, general and specific goals, descriptions of various applications, and overall timelines for implementation. Their general nature was appropriate to the stage of implementation which both districts were at; they provided the structure for more detailed planning in the future.

The most successful aspect of Redcliff/Jasper's work together was their collaboration. Through their work with NAPSET the two districts' special education programs established

procedures for sharing and exchange which will continue long after the end of this project. It was the LPT leaders' interest in collaboration that was primarily responsible for its occurring; however, through their efforts both planning teams have experienced the benefits of collaboration and are likely to be more interested in collaborative efforts in the future.

In fact, the team leaders were instrumental to the teams' overall success. In Jasper the team leader had substantial support from a committed LPT. The structure of the team virtually guaranteed this support, however; as a department, the Jasper special ed staff is likely to continue to take responsibility for technology issues. In Redcliff, the team leader worked alone more often. Given the support she receives from Jasper, it is likely that she will remain actively involved in technology issues in the future. Whether the LPT continues or not is less certain.

The outcome of the two leaders' training in neighboring districts is hard to evaluate at this point. It is unlikely that either could supply the level of assistance provided to their districts by the NAPSET liaison; on the other hand, they may have initiated a kind of regional sharing and collaboration in special ed that did not exist before their workshops. They have both become known in the region as technology activists -- through their workshops and at Computer Using Educators (CUE) meetings, where they have given presentations. If nothing else, their work in the region has sparked greater interest in and enthusiasm for the use of technology in special education.